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ABSTRACT

The document is the second in a two volume series of evaluative data regarding the elementary school social studies curriculum, "Man: A Course of Study" (MACOS). The document is presented in four sections. The first section presents findings on the use of films, reading material, and educational games in the MACOS curriculum. Findings indicated that films, stories of other cultures, and simulation games were closely associated with high student interest in MACOS and with increased knowledge about subjects covered in the MACOS curriculum. The second section discusses observation of MACOS and non-MACOS social studies classes from 1967-1969. Findings indicated that MACOS teachers were more open with their students than were other teachers and that MACOS lessons were more often aimed at conceptual development than non-MACOS lessons were. The third section reviews objectives of social studies teacher education programs and offers case studies of MACOS workshops. The final section offers interviews with teachers who worked with MACOS for at least one year. In the interviews, teachers stressed that working with MACOS made them understand the importance of active listening, communicating, observing, sharing in group exchanges, and expressing ideas orally. The document concludes with appendices including a description of the field testing sample, observation forms, and sample interview questions. (DB)

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CURIOSITY / COMPETENCE / COMMUNITY

AN EVALUATION OF MAN: A COURSE OF STUDY

Volume II

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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SECTION IV

ISSUES OF MEDIA, METHODS AND MATERIALS

Films: The Human Dimension

> I think everything should be put in (film), cause then maybe kids will understand more better... like how the salmon reproduce and everything... every time we learn something new, we should have a movie.
>
> -- Center city student

> ... The general reaction at the end of a film was, "You can't do this to us, there has got to be more."
>
> -- Fifth grade teacher

As the most expensive component and basic text of MACOS, film deserves special attention. Both center city and suburban teachers commented on the power of film to convey course material to slower youngsters:

> I think some of the slower kids are getting more knowledge because of the high use of films. They don't have to pick up everything through the written word that they had to... they have readings, but the readings always back up what's been in the films rather than being brand new information.. .. so many of the slower kids do have facts to talk about now... plus... (kids) are into information. They're not just asked to imagine information. It goes back to knowing things. Making judgments with having the knowledge... It takes novelists, I think, to create the closeness to the things that we study that these films do.

This teacher went on to stress the importance of film not only for its imaginal quality but also for the way in which its information provides a basis for drawing conclusions:

> ... they're observant.... one way you draw conclusions is to have a lot of facts and then abstract into something... it's these kinds of abstracting from particulars that you've aimed at.... I wouldn't say that they can do it spontaneously, but I see them able to... categorize, for instance, fairly well. And they delight in making long lists of proved categories. So they really have to look and think about these things.

Teachers particularly noted the power of the Netsilik films. There seem to be certain human attributes that are most directly and vividly conveyed through the visual medium. Primarily, these are attributes of the world of sensation, the affective world of responsive feeling.

> I watched (my students) watching the (Netsilik) films. It was a joy. Their reaction to the child's laugh -- Umiapik laughs, and it's a delightful child's laugh -- and two-thirds of the children chuckled along with him.... The games they play are very much like ours. (The children) commented, for example, that in the gameplaying they really were care-free and you saw them smile broadly, where up to that they were not. You could tell there was a warmth or a happiness....

In Toward a Theory of Instruction, Bruner has commented upon the "will to learn" and has described the dimension of social reciprocity (the cornerstone, perhaps, of human society) as the deep human need to respond to others and to operate jointly with them toward an objective. The attributes of this reciprocity are pervasive, immediate, of the senses, not discursive in a clear, sequential pattern. They are more spontaneous reactions of the human being toward his fellows and their situations. With immediacy and emotion, films in this course draw students into the web of Netsilik life and thus into a reciprocal relationship with these people. Interviews with youngsters make this clear, and teachers in describing the details of the films that evoke positive responses in youngsters, give details that concern primarily the feelings people display. The understanding that film creates is the understanding of shared experience - of reciprocity - that visual images convey directly, in scenes of joy, warmth, laughter, anger. One teacher summarized it this way:

> It is my opinion that their response to the films about the Netsilik was warm, and well, human.

The negative reactions that a few aspects of the film arouse -- the scenes of skinning the animals or eating the eyeball, for example -- are typified by a "turning away," a rejection of the ways of others based on strange and unfamiliar habits. The youngsters are not able to fit their efforts into such an enterprise; the visual images arouse not reciprocal involvement based on shared experience, but rejection based on the strangeness of the activity. The weight of evidence in the Netsilik films does not fall on the attributes of Netsilik lives that can be disturbing, however, and youngsters as a group are able to identify with enough behaviors that a basic sense of common, shared humanity is felt.

We turn to the recent work of D. O. Hebb to find some reflection on the psychological import of visual images in our organizing and interpretation of experience. In a popular article[1], he put succinctly the importance of the image in ideation:

> ... thought is by no means exclusively verbal. When General X makes a speech and I find my fingertips itching and have imagery of shoving his head in a bucket of water, I know what I think of X and of the speech. When on a hot summer day I see a sheet of smooth water and then feel heretofore unnoticed sweat on my face and back and have visual and somasthetic imagery of immersing myself in the water, I learn something about my previous mental state (unrecognized discomfort).
>
> ... Thought consists of more than imagery, as Kulpe showed. Our imagery does not actually control our behavior but imagery may be the basis of inference in self-knowledge. The cell-assembly activity that is perception, when directly excited by sensation or associatively excited by imagery, is part of the

---

[1] Hebb, Donald O., "The Mind's Eye," in Psychology Today, Vol. 2, No. 12, p. 68, May 1969.

> thought process. Sensation and imagery are thus very direct sources of self-knowledge.

These statements logically extend even to an understanding of the details children select to illustrate their thinking about Netsilik life. When they speak of the use of tools, and Netsilik patience and intelligence in surviving by using the tools they have constructed, the expression is always in terms of a visual image. When they speak of the Netsilik feelings about life, again they use the visual image, generally taken from the films, for conveying the links to their own experience. The "reality" of Netsilik life -- the fact that the world of the Eskimo exists for them with a good degree of vividness and human meaning -- is most directly attributable to the films of the course, supported and expanded by the records and the booklets.

One teacher said, "The Eskimo represents something that's in them," and it is that representation on film that is most striking in impact. Children's response to the Netsilik is not usually "child-like." They have a global response drawn from central themes of human survival and feelings of humans toward one another: how individuals act and what this means for the life a group creates for itself. When they reflect about the materials, it is seldom that one encounters a sole focus upon details of technology or a rote recall of Netsilik attributes. The global human response is perhaps the most impressive achievement of the unit. From exposure to these materials, children want to go on and learn more about man, his behavior, his feelings, his beliefs.

> (Anything you'd want to change, or any comments you have?)
>
> More films. (girl)

> You can learn a lot about it just by watching films. (boy)
>
> More films, because you know how they're alike in your mind, but you can't see it, you know what I mean. (girl)
>
> And they're spaced so far apart, and when you want to see another film, you can't. And then when it comes, you want to see it four or five times....(boy)

The May 16, 1969 issue of LIFE magazine, presenting the Harris poll on the U.S. high school, contained the following statement:

> One (school) innovation... got an overwhelming thumbs-down from the students: teaching by films and closed-circuit television. The reason, they said, was that it cast them in a passive role and froze out class discussion.

Anyone who has seen the usual films shown in classrooms can understand students' reactions. Usually such films are didactic and lacking in artistry. There are crucial differences between traditional use of film in the classroom and use of film in MACOS. Films in this course are not appendages or special extras to school learning; they are the integral text. Rather than freezing out discussion, they trigger much of the questioning and exploring that go on in class and small group discussion. Children are not passive, but active viewers, formulating questions or seeking evidence for existing questions as they watch the films. The films themselves are also used in active ways, as in projects centered around film loops, where the children control the use of viewing and the equipment that accompanies the loops.

The most crucial difference, however, lies in the content of the films. Children are quick to assess the "reality" quotient of these ethnographic films, and they distinguish between the first-hand, natural quality of these materials and the unreal quality of most TV and film materials. Their comments comparing television programs with MACOS films make note of this distinction.

> (How do these films compare with programs on TV?)
>
> I think they're a lot more educational than the ones on TV. They're not fake, like Superman and Morning Cartoons and all the other super bat people.
>
> When they kill an animal... in the EDC films, you get worried because you know it's real. But then on TV, you know that it's a dummy or something, and you don't get as worried.
>
> On TV, in a way, all the time you always get the same thing. It always happens the same. The good guys always win on most of the programs. And it's always over and over, but in different scenes and in different actions and in different ways.... it gets boring. These aren't like that... they're true stories, like.

These EDC films used in classroom situations have an authenticity that is unquestioned, and this makes the confrontation of filmed evidence and information a serious one, accepted as true and worth assimilating by youngsters. What may be even more important is that it seems to be the school setting and the serious nature of course materials -- honest ethnographic film -- that actually lend this medium its authenticity. On the basis of earlier experimentation with other EDC units, we had concluded that it was probably the visual image per se that was its own witness of reality. Yet youngsters made such clear distinctions between this type of film and typical television fare that a different conclusion seems warranted: quality and veracity seem to be critical variables.

> These films tell you more... mostly television shows... are fiction, and they don't have that many that are true.

Children in all types of schools made comments about the value of the films in conveying the total environment and surround of the materials. A center city child said:

> ... you learn more about it than reading. You see how they act, and in reading you just see the pictures. Like the salmon. (in reading) you don't see the way he acts, how fast he goes. They're just shown in a (still) picture, just staying there -- (you have to) make believe the water's flowing by.

And a suburban child stressed the same point:

> Ellie: I liked the films better than anything else.
>
> (What did you like about the films?)
>
> Ellie: You learn more from them. When you read it in a book, you have to picture it in your mind, but when you can see it in the movies, you don't.

While the stark reality of the Netsilik hunting films were occasionally mentioned as unpleasant to watch, youngsters had strong interest in these films. On the national checklist, the hunting films were most frequently selected by students as the ones they liked best of all the Netsilik films. A girl said:

> In the beginning when the seals were killed, all the class yelled, because all the girls, you know, hated it, and like at the end nobody said anything, because they were used to it and it taught us what they have to go through.

The Issue of Relevance

Any evaluation of the materials of the course, particularly the films, cannot help but deal with a question of special importance to educators: Is MAN: A COURSE OF STUDY relevant to the lives of children? Hearing youngsters and their teachers discuss the powerfully human qualities of the Netsilik films is strong evidence for relevance if we define this as the quality of contact with the child's growing edge -- his concern with his own and other lives in terms of what it means to be a human being. Particularly with the Netsilik unit, children use the films as the basis of comparisons with their own behaviors and feelings.

> Well, the Eskimo films, they were... people like us, but they had different customs and things. But it was more interesting the way they lived their lives, how they lived.
>
> On the films, I liked the Eskimos best, because when they showed a film, they seemed more like us. They sort of gave me a picture of my family if I were out there. Like the time they were crossing the river. If my father was there, I guess he would cross it first, just to see how deep it was, and then he would carry my mother across, and I'm just about as tall as he is, so I could walk across, but my sister would have to be carried. And my mother would help carry something on her head as we walked across. I could, so could my father. That's one thing in the picture I saw. And my mother always combs her hair....

Other boys and girls from this same fifth grade center city classroom conveyed a sense of the power of ethnographic films to make strange and unfamiliar human habits more known and thus more acceptable as part of a necessary range of human behaviors arising from human necessities and ways of life.

> There were a lot of things that I didn't like, but I

> don't think they should change them. Like when they took the animal apart and they skinned him, I didn't like that, but there's no reason why you should change it, because it's true, that's what they did. So let them. We have to clean fish and take them apart before we have to eat them, too.
>
> And just because you don't like it, doesn't mean... that's their way of living.

Four girls said one after the other in a group interview:

> I like the film about Eskimos eating the fish.
>
> They cut the inside. He cut it up.
>
> And the little boy went to eat the eye.
>
> Oooh, that was icky. It's something like a treat. Like somebody gets the wishbone.

The capacity of children for honest confrontation is great and real. No one listening to the honest responses and thoughtfulness which children have given to questions about this course could doubt their deep interest in questions about human kind. One child expressed the desire at the end of the course to "go in deeper, more into man."

Implications for Instruction

Considering these individual responses of children and teachers and also checklist results from the total field sample that reveal overwhelming selection of film as "easiest way to learn," and the mode by which children "learned most" (with almost 90 percent of children selecting these options), we believe that the special role of films in MAN: A COURSE OF STUDY rests on a fundamental point of learning: footage that retains a good deal of "real time" and that represents authentic behavior triggers a process of visual modeling that supports an unusual degree of identification with the life represented on film.

As noted, the understanding that film creates is the understanding of shared experience -- once these links have been created, there is the additional value that they remain in children's memories as affective triggers to recall. Further, the naturalism, the ethnographic reality of the footage in this course, serve to remove the material from historical time. The behavior and feelings being observed are not "dated" and thus transformed into objects that can be viewed from a more remote plateau of involvement.

Reflecting on Hebb's statement that sensation and imagery are very direct sources of self-knowledge, we are now impinging upon an area that up to this point has not been mentioned directly: the area of values. The more it is possible to find links back to the self -- to open the pathways to self-reference -- then the more one connects with the area called "values" and "feeling" and thus the more intimate and important all knowledge pertaining to the human becomes. The great social psychologist Gordon Allport has defined values as:

> ... simply meanings perceived as related to self. The child experiences value whenever he knows that a meaning is warm and central to himself.[1]

We would suggest that the films in this course serve an important role in the developing value system of the child. Think for a moment of the many references children have made to feelings aroused by the films, particularly the Netsilik and baboon footage. The most frequent reflective points they present in interviews concern personal responses to issues of nurturance and other relationships among living creatures. They are tying the behavior presented through film to their own feelings about that behavior. The teacher who noticed that her class chuckled along with the happy, laughing Netsilik child, was noticing a critical identification with another human who in many respects was a stranger, an alien, but who had conveyed enough of his essential humanity, his essential childness, that American children could feel their similarity with him, could share in his joy -- and thus a relationship, a positive valuing of that human, could be felt. Out of such daily occurrences of our lives are our values accrued. The more we touch the edges of others' personalities, the larger is our capacity for including them in our ken. Thus the issue of ethnocentricity: children do exhibit strong ethnocentric responses to the Netsilik material; and for large numbers of them, the Netsilik still possess many strange and unattractive characteristics. There is, after all, an element of reality here. But the most powerful component of the course in cutting across these barriers and conveying basic attributes of man's humanness is the film. Its success in a pervasive or enduring sense is an unanswered question; but its immediate effect is apparent.

---

[1] Allport, Gordon W., The Person in Psychology, Selected Essays, Boston: Beacon Press, 1968, p. 164.

The Problem of Ethnocentrism

Since one of the learning goals of the course is "to awaken in children an awareness of the fact that what we regard as acceptable behavior is a product of our culture," the issue of ethnocentrism is important to an evaluation of the Netsilik unit.

The interview materials have demonstrated that children do make links between some Netsilik ways and our own, for example, between feelings for family and friends and their way of relating to one another, and such feelings as we express them. Where basic similarities in human behavior have been grasped, children demonstrate verbally that the unit is having positive effect in creating a sense of the family of man. Do children go beyond the easy correlation of similarity, however, and begin to understand and sometimes enjoy the diversity of human behavior? To this question, we have less clear signs of growth. There is evidence that at the functional level bridging occurs. By that, we mean that the instrumental problem-solving behavior of the Netsilik elicits most favorable reaction from children as an expression of a culture different from their own, not highly technological, but very inventive. Netsilik solutions to hunting and survival needs are considered clever and functional by youngsters.

The diversities that elicit emotional responses do not so easily draw out positive attitudes: the issues of infanticide and senilicide, the killing point of the hunt, the skinning of animals, and the treat of the caribou eye. For example, one scene in a film was universally mentioned by the children who saw it as the most difficult scene to stomach, in a literal sense. Children were asked, "Was there anything in these films that made you dislike Eskimos?"

Jim: Oh, yes. The part when they eat meat raw.... The little kids, the eyeball.

Paul: That's like candy.

Marcia: That's like the best part to them.

Jim: And they eat the intestines....

Marcia: And the lungs on the fish. They go and blow them up like balloons and put string on them on the end.

Paul: And I saw a movie with a little boy, and this one had sound too, and this was a piece on fishing, and the mother would go out and cut out the eye with a knife. And she would put it in his mouth, and he would start crunching on it, and that didn't make me feel too good!

There is rational understanding here, but the behavior is not really seen as "acceptable" -- its visceral impact is too disturbing. Even the physical appearance of the Netsilik -- sallow and less groomed than our own prevailing adult standards dictate -- evokes comment about the poor, sad-looking Netsilik without much consideration of differing standards.

The Netsilik belief system, expressed in terms of magic and spirits, seems to skirt some middle ground of feeling drawing out some sympathetic and some distancing responses. The "distancing" reactions could be attributed to several factors. Children are learning the myths and beliefs of their own culture; and the magical and shamanistic system of the Eskimo is in some conflict with our scientific interpretations of the world. Eskimo beliefs, because they do carry out a "magical" view, are ridiculed by some youngsters who have themselves barely emerged from the "magical" interpretations of early childhood -- and when they do not take a position of cultural relativism, take an "adult" stand of "scientism": we have science instead of magic; we now know the answers. This is always put forth in the form of a rather easy, top of the head kind of comment.

However, despite this skepticism, or relegating of magical beliefs to a more "primitive" way of dealing with experience, many children do grasp the importance of a belief system to organizing and understanding daily life. On a word list exercise in the interviews where they select from several options the two words most important to the Netsilik in their daily lives, almost without exception children select "beliefs," and with good reasons as the interviews illustrate (see, for example, the final interview - May, 1968 - with Kathy, Ellie and Joey, Section II, pp. 36-44. One concise insight was this:

> If you believe in something, you're not afraid.

The sympathetic, even empathetic responses of some children seem to derive from emotional kinship, from delight in the imaginary, the make-believe, and the intuitively true. They feel drawn to the imaginative and perceptive qualities of the Netsilik songs and stories. In addition, most of the Netsilik myths contain acutely realistic insights into human feelings and behavior that strike resonant chords in children. Sharing, guilt, appeasing the powers that be, all contain elements of human psychology that ring true.

It is important to note that children begin to value diverse expressions of humanness not through rational understanding of technology, social organization or cultural symbols, but through encounters with personalities and their stories, either shown on films or told through records and written material, where basic psychological dimensions are illuminated through examples specific to Netsilik culture and beliefs. Telling stories is as old as man, and clearly the impact of "Stories of Beginning Times," "Songs and Stories of the Netsilik Eskimos," of the records, and of other personal expressions can be felt in the remarks youngsters are formulating that show a good deal of sympathetic understanding.

The ethnocentric response is modulated into more catholic views not by growing appreciation of diversity per se but by growing awareness of underlying as well as apparent similarities. As noted, the myths and stories hold common elements of meaning. The feelings of people one toward another particularly in the family situation bring forth comparisons with youngsters' own lives and families.

The preceding raises a question about selective ethnography in relation to ethnocentrism in 10-year-olds. Is there positive value in presenting to upper elementary grade youngsters issues that involve behavior contrary to the fundamental morality of this society? Can children who are working out their own relationship to our culture's social and ethical considerations put in perspective acutely disturbing alien behaviors? The question of anthropological veracity here becomes closely affiliated with the issue of ethnocentrism. Is the conveying of every detail of another society the only honest way to present that society to children; and do details that seem to involve, for example, barbarism as we define it, distort the larger purpose of a course designed to stress man's common heritage and attributes?

We are not raising here the issue of "different," and thus disturbing behaviors per se: the treat of the caribou eye, for example, while arousing negative response, does not strike at the deepest beliefs of a society. Its effect can be, and is, counter-balanced by other positive attributes of Netsilik life. Let us consider the far more significant and alien practice of infanticide.[1] In the 1967-68 field testing of MACOS, a lesson on the Netsilik practice of female infanticide was included. The material was intended to convey the extreme and different survival needs that groups in harsh environments must meet. While this lesson has now been eliminated from the course (even though a short description in Rasmussen's Journal of the difficult roles and values of males and females has been retained), a brief review of children's responses to this topic may highlight two factors in the teaching of value-laden issues: the necessity, if alien human practices are to be introduced, for adequate in-depth exploration and for recognizing the deep psychological implications of "taboo" topics.

A disturbing aspect of children's response to the topic of infanticide was the incorrect understanding most acquired and the consequent interpretation of the Netsilik personality based on this misunderstanding.

---

[1] That female infanticide can be viewed as a necessity by the Netsilik is explained by one old man's comment quoted to Rasmussen: The hardness of life has taught us that it is good to have as many sons as possible." The Rasmussen story goes on to say: "The Netsilik like to have many sons and few daughters. If there is no family to adopt her, it is their custom to allow the child to die. If a girl baby has not already been promised as a future wife, her family may feel that they cannot provide for her."

An interviewer asked children:

> (Do you think the Netsilik have feelings the way you have? Are they very much like you?)
>
> ...they don't really have the same feeling we do, because they live in a whole different environment... they need to kill the girls because they're no good...they don't have enough food.
>
> ...and we would think this was awful, and it's just nothing to them, to kill a little baby
>
> They just, you know, they don't really have a feeling for, like, humans....
>
> All they do is knock off people.

While in these students' class there was understanding that such a practice is intended to insure the survival of the group -- "the whole sort of Eskimo thing would just die out" -- the children did have a great deal of misinformation about infanticide, most believing that the Netsilik "kill" the babies in the sense of murdering them, seldom mentioning the infrequency of this occurrence and the social mores attached to it. The following comment was as close as children came to understanding this very alien and difficult topic:

> Well, they were getting too many girls and not enough boys. They needed hunters, and they couldn't support all the girls and ah, if a baby came out, sometimes it was just good for it to let it die. Just better for the baby...you see, if they're going to kill a baby, they're going to kill it while it's very young, so that it doesn't form a kind of personality they'll get used to, and then it will be harder for them, you know....

There was also an "untouched" tone with which some children discussed the practice: it was seen as "necessary", "understandable", etc. There was a remoteness in response that was disturbing to the EDC staff and teachers using the materials.

Why did children come away with distorted ideas, and frequently sound so "objective" in discussing infanticide; and then seem so sensitive and thoughtful when they discussed other aspects of Eskimo behavior such as beliefs and family life? First, the lesson on such a difficult topic was far too short, and the materials covering the subject of infanticide were sparse and unemotional compared with the materials covering other aspects of Netsilik life. (For this topic, children used only one brief narrative and then had one day's discussion.) Other parts of the course dealing with family life and daily behaviors used films that were rich with instances of affection, learning, sharing, etc. Booklets were replete with tales and beliefs, and resonant with their humanity: fear, love, birth, caring, competition, were conveyed in depth and in graphic terms; even the book illustrations and records supported and helped to carry along the themes. There was opportunity to explore the meanings of various behaviors, and reasons for them.

Second, and akin to the above, it was noticeable in the interviews how children tied their regard and admiration for Netsilik to familiar behaviors especially of a nurturant type. Because so many instances of caring and family warmth were woven through the unit, the children found a multitude of points of contact and familiarity in terms of their own feelings and emotions -- they understood the importance of human feelings about family and beliefs because in their own developing lives these were the crucial and sometimes bewilderingly familiar elements. However, with the topic of infanticide, we were on ground culturally alien and in Freudian terms psychologically fearsome, even dangerous -- the child's wished-for death of the newborn member of the family. How could a child in one or two lessons even come close to admitting or acknowledging the reality of the act in Netsilik life? It must, in truth, be kept non-real -- a surface phenomenon, a fact not within psychological assimilation, particularly when interpreted as "killing". Yet the potency of the topic is revealed by the very fact that children who have spent only one or two days with the subject speak of it so vividly in later interviews. The same children who spoke of the Netsilik as not having "human" feelings could turn around somewhat later in the interview and express a sense of their common humanity as exemplified in other details of Netsilik life. They were not able to reconcile or integrate the very alien behavior with the more understood and familiar ways so they expressed very contradictory interpretations throughout the interview. It is not the contradictions per se that are toublesome -- all human behavior contains contradictions -- but rather that in their basic feelings "for" or "against" the Netsilik as members of the human brotherhood, they could decide to opt "against" because of distorted understanding and their own evolving growth stages.

Coupled with these issues was the additional and understandable problem that this was a topic that teachers didn't feel comfortable in covering. To introduce the topic as factual information briefly discussed and then to leave children with the disconcerting knowledge, without further opportunity to work through the meaning of such behavior and the feelings it arouses in us seemed to be much worse than not introducing it at all:

Vicky: One thing I don't like about the Eskimos.... is the idea that they have to kill their first baby if it's a girl...It's a tradition (but) I don't like it. How would they like it if they were the ones, they had to kill the child, and that child was the only one the lady could have. That wouldn't be right.

Int.: Is there any reason why they sometimes have to do that?

Vicky: Our teacher didn't explain that part. But I guess it's because of the food.

Results of using this lesson in MACOS were inconclusive in terms of answering the questions raised because the lesson was so brief and often poorly used. The evidence, however, illustrates clearly several points: when these topics are treated cursorily and when teachers are not in complete mastery of the facts and not prepared for the many ramifications, such topics do not lead children to greater tolerance for the diversity of adaptive mechanisms in human life styles.

Conceptual Grasp and Generalization

There appear to be special problems for children in grappling with certain of the larger conceptual issues of the course. For example, many youngsters are not able to make conceptual distinctions between behavior controlled by innate urges of animal species -- the internal drives that are beyond control or understanding by the animal -- and behavior governed by man's symbol system for organizing experience and creating rules of life.

Interviewer:	I have a set of words: salmon, herring gull, baboon, American. I was wondering which of these four you think the Netsilik are most like?
Child:	Umm... let me think. I think the salmon, because the salmon, when they lay their eggs, they just go upstream because they have to do it.
Interviewer:	And how are the Eskimos like the salmon?
Child:	Well, the Eskimos, they have to do what they think is right, and the salmon, he just has to do it, you know.

This child has selected an apparent similarity in behavioral outcomes -- each is impelled to behave in a given way. But the propelling mechanism in each case, the core difference between the innate and inarticulate urge, and the elaborate system of regulatory beliefs and survival mechanisms that suggest and coerce certain behaviors in the human animal -- is not yet clear.

Large numbers of children can make no clear distinction between the unique symbolizing capacities of man, and the learned but unconceptualized behaviors of the baboon. Another child when asked the same question as above, replied:

> ... it sound kind of silly, but more like baboons, because they're fighting to stay alive, but they still like each other. And they can do pretty good things. Like they can catch seal and caribou and fish and make igloos and sleds and things... I don't think the baboons think as well as they do.

These are certainly accurate comparisons for the conclusion at which the child arrived. When Eskimos are seen as more like some of the animals studied than like Americans, it is because their specific ways of life seem similar to that which children have learned about animal ways of life -- the hunt for food, the eating of food raw, etc. In addition, they have learned about similarities among many animal groups: dependency of the individual on the group for protection, playfulness, care of the young. These are not qualitatively distinct in their minds. Therefore, relying on known example, some children see the daily life of the Netsilik as more like that of the baboon than that of the American.

In terms of the previous review of ethnocentricism, we see this not so much as illustration of ethnocentric thought as it is of reinforcement via specific example. In meeting specific daily survival needs, the Netsilik show few specific incidents that are the same as our ways of living. They do not go to the supermarket, to school, to an office. That which is comparable is quickly grasped by youngsters: human interaction particularly of parent and child, ingenuity in inventing solutions to problems (technique or technology). Those children who see the Netsilik as more like a salmon or a baboon than an American, do know that the Netsilik is a human being. But children of ten or so utilize in their thinking one-to-one correspondences. In terms of need → act → satisfaction, many specific incidents of Netsilik behavior do correspond more with comparable baboon or chimpanzee actions than with our own. What the child selects perceptually determines the comparative similarities that are also perceived.

With this age level, generalizations seem to be rather accidental rewards drawn out of a series of examples, and are for the most part categorical -- "Eskimos are nomads" -- rather than relational. In terms of Jean Piaget's propositions about the stages of intellectual development[1], we would expect the fifth-grader to be moving from the stage of concrete operations into the formal stage of mental development; that is, to be in the process of developing mental operations that result in ability to comprehend relational significance. Within this framework, the limited ability of children to generalize beyond apparent similarities to more abstract unifying qualities would be due to immaturity in cognitive processes. Interestingly, their questions seem to reveal more directly than their answers or summarizing statements the process of conceptual growth that is on-going. Ten-year-olds are developing in ability to conceptualize verbally, but at this age they appear to be able to frame conceptual questions more easily and more often than to arrive at conceptual conclusions. (See Do Children Ask Questions and Share Ideas Productively?)

Children's ability to master and use correctly the concepts in MAN:

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[1] In a recent collection of essays honoring Piaget (Studies in Cognitive Development, David Elkind, John H. Flavell, editors, Oxford University Press, 1969) Sigel has noted that in a study he conducted in 1961, "Results from the analysis of a task, in which children were asked to explain such words as 'brother' and 'animal', revealed that before the fourth and fifth grades children could not define brother in terms of a common relationship." (p. 475)

A COURSE OF STUDY, then, depends heavily upon the quality and numerousness of examples they acquire with each major theme. Peter Dow has called this "teaching by analogy" -- an emphasis upon the plentiful use of powerful examples. Since we cannot expect teachers new to the course necessarily to be able to provide a range of good analogies, one task of in-service education, as the course progresses, should be thoughtful exploration of examples of major concepts. Their purpose is to lead to a level of ideation above specific detail only, so that the "specific incidents" problem does not dominate. On a broad base of examples children begin to construct rudimentary general structures, and to lay groundwork for later insights and organizing ideas, as their own capacities for formal thought mature and are put in service of new experiences.

It is important to note here that the manner in which we interpret problems in the course depends to large extent on our expectations of fifth graders. If we accept certain limits in the ability of the young to recognize general ideas, to relate them to one another, and to generate new expressions of inclusive thought, then standards for conceptual attainment are less stringent. But the burden of creating exercises specifically designed to build relational understanding rests more heavily on the curriculum developers.

Natural Selection: An Example of Conceptual Difficulty

Perhaps the most difficult conceptual area in the course was natural selection. The theory of evolution by natural selection proved to be a problem for the MAN: A COURSE OF STUDY staff to develop, for teachers to understand, and for students to grasp. The elementary staff once considered eliminating natural selection from the course because of its abstraction and complexity, but the topic was judged to be an important component of the intellectual scheme of the course. For the 1968-1969 field test, therefore, new student materials on evolution (four worksheets and a slide program) were prepared. Suggestions were made for a seminar in which teachers would work through student materials.

Members of the evaluation staff examined natural selection materials in the context of teacher seminars, classroom lessons, and student interviews to determine how the topic was faring in the field, and to provide immediate feedback to the working party.

Teacher Seminars

In the seminars on natural selection the overriding problem was a lack of understanding of the subject matter on the part of the leader and teachers. While content understanding is only one of many goals for seminar sessions, it was crucial here because teachers tended to be uninformed or misinformed about evolution by natural selection.

At two of the three sessions observed, leaders were unable to fulfill their roles because they lacked expertise in the subject matter. They were unable to answer teachers' questions or to correct their erroneous statements. In one group, for example, teachers claimed that if a structure is unused, it changes or becomes extinct. In another, the group failed to distinguish between physical and cultural adaptation, and in neither case were the concepts clarified. The third session observed was atypical in that it was conducted by a member of the MACOS staff who had been developing the natural selection materials. Not surprisingly, it was an interesting and informative meeting. The problem, as suggested to the elementary staff at the time, was how to replicate on a large scale the experience of having a visiting expert.

Classroom Observations

The problems in the seminars were significant because the teachers' lack of knowledge hampered their effectiveness in the classroom. The student materials were never intended to be teacher-proof; their success depended in good measure on the teachers' having a firm grasp of the essential conceptual points.

On the simplest level of understanding--that of the necessity for survival of a "fit" between animals and the environment--a slide program of imaginary animals was successful. The program showed fantasy animals, most of which were adapted to their environment by protective coloration. The environment changed, permitting only the animals adapted to the new environment to survive. Eventually, most of the animals were colored so as to blend into the environment. The slide program and worksheets, however, were intended to do more than illustrate camouflage or environmental "fit", but neither the materials nor the classroom discussions proceeded to serious consideration of the mechanism of species change.

A further problem in classroom work was the confusion between biological and cultural adaptation, similar to the confusion observed in the teacher meetings. A story to illustrate the latter notion was included as optional material; the choice was unfortunate because teachers and students failed to see the purpose of the story. It didn't seem related to the worksheets students had been doing on natural selection. The worksheets and the story, of course, were not supposed to be similar, but since the classes didn't understand the concept of natural selection, they were unable to differentiate between it and a new concept.

Student Interviews

Interviews with students confirmed the feelings obtained from classrooms that students, by and large, failed to understand natural selection. About one fourth of the students could be judged to show the basic comprehension desired by the curriculum developers. The two best responses are reprinted below:

> (Has your class talked about natural selection?)
>
> Uh-huh.
>
> (What do they mean by that?)
>
> I didn't get much out of it.
>
> (Okay. That's pretty honest. Let me ask you a slightly different question, then. If an animal's environment were to change, would anything else have to happen in order for that animal to survive?)
>
> Well, the animal would have to... like, if the environment turned dry and an animal needed water and everything and was green and the environment was brown, it would have to turn brown, You know, it would turn darker so they would be camouflaged.

(Okay. How would those changes occur? How do you think that would happen?)

I don't know. Like offsprings.

(What do you mean by that?)

Well, they could, like, reproduce and the babies, maybe they would be different than their parents in color, and then they could survive.

(All right. That's kind of interesting. I think you have an interesting idea. Do you want to tell me a little more about it?)

I don't know much about it.

(No, I think you probably do.)

The more they turn color, the more they will survive.

(Okay. What do we mean when we talk about variation in a species?)

Different kinds of species.

(Is that a good thing?)

Yes.

(Why?)

So, like, more can survive if the environment changes.

(Okay.)

* * *

(Have you talked about natural selection in class?)

Yeah, we talked a little bit about it.

(Do you remember what the phrase means?)

Natural selection. No, I forgot. It was a while ago that we had it.

(If an animal's environment were to change, would anything else have to happen to the animals for the species to survive?)

It depends. Like, if it became very dry, if it became very wet, if it became a different color, his color would have to change. Or if it became a rocky area, he'd have to become a strong, big animal.

(How would that change take place, really?)

It would have to take place over many generations. The first generation wouldn't be able to survive, but he'd try very hard so he might do a little bit of it, so he might last a little longer than he would if he didn't try to adapt, and it would keep taking place and it would evolve, and finally the finished product would be able to live in this environment.

(What do we mean by variation in species?)

A variation. Like a dog, some of them have spots and some of them don't. Some of them are multicolored and some are one color, and some are big and some are small, some have big tails and some have little tails, some have fat tails and some have skinny tails. Some of them are skinny and some of them are fat; some of them are very big and some of them are very small.

(Is it a good thing to have?)

I guess it's interesting if the animals are different colors or something.

(Would it be useful for that species of animals?)

In some cases, and some cases it wouldn't.

(In what cases would it be useful to have variations like that?)

Well, like a dog, a wild dog, if he was in the woodland he'd have to be colored to the woodland, but if he was in another kind of area, like a grassland, he'd have to be the color of that. He'd have to be, like, green in some places.

These children have an idea of adaptation to the environment, of species change and of the mechanism of natural selection. Their responses are imprecise and are sometimes anthropomorphic, but indicate that the children have generally met the cognitive goals of this particular section of MAN: A COURSE OF STUDY.

What can be said of the rest of the responses? First, they show that most children do understand that survival depends on the fit between a species and its environment. The children, however, find it difficult to generalize beyond the specific examples of adaptation provided by the MACOS materials, and become hooked on camouflage as the sum total of adaptive responses to the environment.

Second, while many students verbally accept the positive value of variation, they fail to connect species survival and variation, or to see the role of variation in natural selection. Rather, they are apt to say that "it's easier to observe each one [animal] if they're a little different."

Third, the whole concept of natural selection involves high-order abstractions: "species" is an abstraction, the time element is difficult to comprehend, and chance (mutation) is both abstract and contrary to the way children (and most adults) are used to thinking. So, while students recognize that adaptation is necessary for survival and that if the environment changes, something happens, they do not understand that changes occur on the species level or how these changes occur. Given a need to create order out of their confusion, they are apt to explain the concepts in terms with which they are familiar--an animal (rather than a species), a pet (which has been bred for traits we desire, but not necessarily those which would promote the species survival in a natural environment.) Or children may suggest that animals have control over their situation and would solve any problems much as humans would: animals would move to a new, more comfortable environment if the old one became unsuitable. Some children describe environmental changes as day-to-day variations in the weather; others define natural selection as chameleon-like change. When children try to think about natural selection in these concrete terms, logic leads them to erroneous explanations.

Conclusions

The report to the elementary staff of field experiences with natural selection materials was intended primarily to provide data for decision-making: Should the topic be taught? If so, was the topic cognitively appropriate for all students? If the topic were to be retained, should the student materials be altered? What sorts of preparation do teachers need to teach the topic?

In the past year, a number of changes have been made in the natural selection section. Two teacher seminars are now devoted to the topic, and a number of readings have been provided for teachers, as well as two tape recordings by a Harvard biologist explaining natural selection. The student materials have become optional, to be used by a few individuals or the whole class at the teacher's discretion. A new concept booklet explaining natural selection has been added, the slide program has been eliminated, and the suggestions for discussing human cultural (as opposed to natural) selection have been modified. These changes were effected for the 1969-1970 school year, so the evaluation staff has been unable to assess their impact.

Do Children Ask Questions and Share Ideas Productively?

The stance of the inquirer, the question-poser, is formulated throughout MACOS; and the exploration of questions occurs most frequently in group work and class discussions. Thus, two important activities are central to the course: question-posing, and interactive learning or the shared exchange of ideas and opinions. Through models, exercises, and explicit guides in the materials, children are expected to develop a vocabulary, a bank of ideas, and a format for investigating topics in the course, that will be put to service in the projects and discussions they carry through. It has been questioned whether these are productive activities around which to focus much of a curriculum. Do children learn what it means to have an inquiring attitude toward materials? Are they able to adopt the questioning mode of the scientist and utilize this mode in working with MACOS materials? To address these concerns, **two** vignettes follow that are taken from classroom observations illustrating student behavior and teacher interaction with a class. These observations highlight both children's question-posing and issues in the classroom management of group work and discussion.

It seems particularly important to investigate these topics in city schools, for many researchers and educators have described the center city classrooms of this country as places of authoritative, teacher-directed education. Opinions, questioning attitudes and challenging of information are actively discouraged. Evidence of this repressive syndrome is overwhelming in the new literature. Can curriculum become the energizing catalyst for a change in these perpetuated patterns of traditional schooling? From observations, we would suggest there is hope for change. In observer accounts of the EDC classroom one often comes upon a lesson that exemplifies the MACOS point of view toward learning and a decided change from traditional stereotypes of the classroom.

Let us look in on a fifth grade class drawn from a center city population, both black and white. The school is new, conservatively but well designed, and well-equipped. The teachers are in general a young group, but several earlier visits to classrooms revealed teaching styles cast in the traditional mold.

The teacher of this MACOS class is young, attractive. She is about to introduce the morning's social studies work as the observer enters the classroom. The work for the session is not an EDC suggested lesson but rather is a teacher-devised exercise: to investigate characteristics of arctic animals, using the booklet "The Arctic" as the scurce material. Children are sitting in rows, each ready with the booklet in hand. Thus from the beginning of the lesson there is a juxtaposition of MACOS against more traditional postures and expectations.

Teacher: "We're going to divide into groups this morning. Each group will have a card naming an arctic animal, and will investigate that animal, to find out as much as possible about it."

Then she poses a task as an introduction to their work, before they divide into groups.

Teacher: If you knew nothing about Arctic animals, what would you look for, what questions would you ask?

The children raise their hands, and the teacher writes their questions on the board as they give them. There is surprisingly little repetition of questions, and much alertness and enthusiasm for the task. The following questions are written on the board, each from a different child, so that about three-quarters of the class makes a contribution.

1. Where do they live?
2. How do they act?
3. What do they eat?
4. How do they communicate?
5. How do they respond to each other?
6. How many offspring do they have?
7. How do they protect themselves?
8. What do they look like?
9. How do they adapt to their environment?
10. How do they feed their offspring?
11. Can they breathe underwater?
12. How do they reproduce?
13. Do they kill other animals?
14. How do they know when a predator is near?
15. Are they dominant over some other animals?
16. How big do they get?

Two things immediately strike the reader of these questions: first, the operational use to which the children put their earlier work in animal studies, showing by their questions that they have developed a model of basic categories for exploring behavior; and second, their mastery of the vocabulary of the course. They obviously enjoy displaying this latter mastery. And such an order of questioning clearly would not have been possible before the course. After several months of work, the children can produce quickly a set of important organizing questions that get at attributes of survival. Moreover they listen to each other in the course of preparing their list, and avoid repetitive or "silly" questions. They display, in other words, noticeable interactive ability. Among themselves, they have managed to cover as significant a group of questions as one would expect from a scientist in the field. The teacher, in fact, seems somewhat surprised at the quality, and compliments the class as she concludes this task. She then directs them to use these questions as they read about and study their animal groups, and to write down answers to the questions as they work.

The students group themselves quietly, without disruption, appearing to bring considerable interest to their work and referring frequently to the questions as they read aloud to each other. (They do segregate themselves by sex, with boys working together, girls working together. The teacher does not interfere in their grouping arrangements but does move from group to group to answer questions as requested by the children.)

Unfortunately, the teacher does not help groups to select classes or categories of questions on which to concentrate; the task becomes too difficult by the range of questions the children have raised, and impossible of real attack by the brevity of information contained in the booklet. The material, in this case, is not equal to the children's curiosity (the booklet gives only brief sketches of different Arctic animals, and was not intended as a comprehensive source document), and the teacher does not mitigate the problem by suggesting additional sources. There is no time for reporting at the end of the group work; recess interferes, after 50 minutes of the lesson.

Not an exemplary lesson in that the teacher left the task too general and overwhelming, without adequate resource material, and did not save time for follow-up reporting and summarizing from the groups; nevertheless, an impressive display of students' ability to formulate important questions.

How might this teacher manage classroom arrangements so that group work focused around the inquiry method would be more productive for students? The management of another class (incidentally suburban) suggests some guidelines. While this is only one example, it does emphasize teacher preparation and follow-through in creating a productive working environment and in helping students to focus their thinking around a manageable set of inquiries.

The youngsters had previously watched film loops of a baboon troop and had raised the questions below as topics which could be researched during viewing. The questions were on the blackboard as the lesson began:

What are they like?
Do they fight between troops?
Can the troop separate?
How do they pick new leaders?
Is there a rank?
Can offspring change troops?

The questions are less global and inclusive than the previous set, but manageable, focused as they are around troop behavior. As the MACOS lesson starts, the teacher spends some time organizing the groups for working. After they have separated into their groups, she assigns a leader of each. She then visits and guides the groups as they go over notes taken while observing the loops and prepare a group paper that answers the questions. When about ten to fifteen minutes of working time have elapsed, the teacher flicks the lights to indicate the end of that phase of the lesson. Full class discussion ensues, with children remaining in the group arrangement. The teacher makes it a point to praise the groups for the way the small group discussions went on. She adds new questions to the board as they now raise them.

The teacher also tells the children they have raised "ideas" and she highlights one topic -- behavior as related to age and sex -- for full discussion. Thus, she serves as a selective guide to the full class work. She makes the comment, "Listen please to what somebody else is saying before you start talking." In other words, she pays considerable attention to the dynamics involved in discussion involving all members. She often describes the class's behavior to them as a teaching device. For example, when they extrapolate beyond the data given in the film loops in trying to answer the questions, she comments: "Now you're getting beyond things you could have seen, to guessing about things." She keeps bringing the children back to what they have observed, away from what they think is logical in human terms.

They next spend a second ten-minute period in small group talk about what is innate and what is learned behavior in baboons. The teacher reminds them to concentrate on what they saw. She then purposely throws out a question to the whole class based on a conversation of students in one of the groups: "What do you mean by a baboon father? What does a human father do?" From their groups, students exchange ideas. As examples of the discussion, a student replies, "I don't think there is a family like in humans," and another disagrees, with still another student bringing up the baboon behaviors of mating and caring for young as comparative characteristics. A genuine conversation is carried on. While no points are settled definitively, there is a feeling in the room that something has been accomplished.

The teacher closes the lesson with: "David brought up a great question -- Do baboons know they're going to die?" The class is left with this specific, intriguing issue to ponder as the teacher goes on to the next subject of study.

These examples illustrate the productive possibilities of childrens' questions as focal points for group work applying investigation skills to source materials. Children, through question-posing and follow-up projects, can demonstrate their grasp of the conceptual and methodological framework of the course. Further, the examples point to the focal role of the teacher in the process of inquiry and in interactive learning; and to problems teachers must often resolve: defining tasks of investigation congruent with the materials at hand; guidance of children in setting up working arrangements; and following through after children have worked on a problem, by serving as a guide for give and take about the collected data and the new questions raised. These are mediating or implementing functions that can be a new role for many teachers, one that takes some practice and some reflection to develop.

Classroom Use of Reading Materials

One of the innovations of the MAN: A COURSE OF STUDY curriculum is its consistent use of a variety of media to impart information and facilitate learning. The course developers designed each lesson so that it would contain a range of activities; this is in contrast to the traditional social studies teaching mode of only reading from the text and answering the teacher's questions. Yet much of the MACOS content is gained through reading, and one can sense a discrepancy between the image of MACOS presented in the teacher's guide and the data from the field.

In a plan for a two-day lesson, for example, children are to view a half-hour film, discuss questions arising from the film, make charts relating material in the film to previously learned information, and read the appropriate booklet to complete the chart. Here the reading is intended to be an information-gathering exercise and is imbedded within a larger activity. In many classrooms, however, reading first is done as a comprehension exercise, perhaps with the whole class working together on reading the booklet and answering the teacher's questions. Then the class might move on to using the booklet as an information resource to complete the chart. Contrary to the impression conveyed by the teacher's guide, children may spend as much or more time reading as viewing in this lesson.

Another lesson plan suggests that children begin by reading a very short selection on the rules of the Netsilik community (no questions are suggested for discussion). Students then are to read a longer (seven page) selection in another booklet; the class is expected to discuss specific and general questions dealing with group control over individual deviant behavior. Again the problem is the amount of time required to complete the reading -- if it takes a good part of the period, the discussion is likely to be sacrificed. When this happens the observed class session seems more concerned with information than concepts, with specifics than generalities, with the Netsilik world than with the child's world.

In general, the lesson plans in the teacher guides specify the reading appropriate to that day's work; often questions are suggested to guide reading, sometimes the plan suggests a particular structure for reading (small groups, etc.). But if a class were to complete all the activities for a given day, it would have available only a few minutes for doing the reading. In reality, reading takes a good deal of class time, and the amount is dependent on whether the class is urban or suburban:

Suburban classrooms approach most closely the EDC model of the multi-activity lesson in which reading occurs only some of the time and is related to a number of different activities when it does occur. In urban classrooms children are far more likely to do some reading every day; similarly they have fewer different activities per lesson. Suburban classes average 3.5 non-reading activities per day, while urban classes average 2.6 non-reading activities. Reading occurs in 54% of the lessons in the suburbs, compared with 76% of urban lessons.

This comparison was made between classes in an inner-city school system and classes in a middle to upper middle-class suburban system. The difference in time devoted to reading likely reflects the students' ability. Children in the suburbs are more advanced in reading level; consequently it takes them much less time to complete a given amount of reading. City teachers are apt to devote an entire lesson to the reading and discussion of a MACOS booklet, and when this happens, they appear not to be following the EDC guide. What they are doing, though, is adjusting the plans to meet the needs of their children -- or, at least, their perception of the children's needs. At this point we do not know if city teachers devote too much time to reading or if their time allotments are appropriate. But it is important to note that, when interviewed, the teachers were unconcerned about their failure to follow the guide precisely.

Further, urban children generally did not complain about an excess of reading. On the second Netsilik checklist (1969), 49% of urban students indicated that "the boys and girls in my class have spent most time" reading, while 35.5% of the suburban students thought this was true. Urban children correctly perceived the focus of classroom work in MACOS, and responded positively to this orientation -- 42% liked reading the booklets best (compared to 22% of suburban children). And despite the significant differences in time devoted to reading activities in the two settings (as indicated both by observations and students' judgments), both groups agreed that to get good marks in the course, the most important thing was to take part in class discussions (63% urban; 64% suburban).

Furthermore, all MACOS classes contained more varied activities and less reading than did the observed non-MACOS classes. Comparing the inner city MACOS group and non-MACOS classes in an urban system we find that reading occurred during 76% of MACOS sessions and 100% of non-MACOS sessions. Urban MACOS classes averaged 2.6 non-reading activities per session, while comparable non-MACOS classes average 1.6 non-reading activities. Urban MACOS classes are mid-point between suburban MACOS and urban non-MACOS classes with regard to the use of reading material in social studies.

The reading issue illustrates the manner in which innovative curriculum has a measurable impact on the life of the classroom -- witness the differences between EDC and non-EDC classes. It also indicates the range of uses to which a given set of materials may be adapted -- as in the urban and suburban EDC classrooms.

Reading Materials and the Center City

Center city teachers, rightly or wrongly, have little faith in their students' desire or ability to read. As one center city teacher put it:

> ...reading is a real problem, to get the kids to want to read, that's a struggle. There's none of the middle class love of reading with these kids...Reading is a chore, reading is school, and they fight reading.

Yet we know that MACOS has 22 booklets of reading material, and that these contain a good portion of the content of the course. Do inner-city youngsters read these booklets, do they learn from them, do they respond to their format and care about the extensive preparation that went into these materials?

One source of information here again is the teacher. A teacher in a Northeast city felt strongly on this issue:

> It could very easily be turned into a reading program... From my point of view, it's set up so great for reading that all we had to do was supply books. The kids would be reading what they want to read. I think it would make a tremendous reading program.

The booklets in his view contained materials that were intrinsically interesting to youngsters, and that drew them into reading by the fascinating quality of the topics covered. He felt his class had greatly improved their reading skills from beginning to end of the year, far more than he usually noted with his 5th graders, and he attributed much of this growth to MACOS. While we do not doubt that the course may promote a new interest in reading, we believe that some of this motivation comes from the diversity of sources of information in the course, which stress and reinforce the same basic set of concepts. Youngsters do not have to look solely to the booklets as their source of knowledge. Films and records display, visually and orally much of the basic material. Enactive exercises, such as creation of the baboon environment board, give opportunity for manipulation of objects in three dimensions; ecology is given form as children work together in groups to create their environment and its inhabitants.

Again, a component emerges in this brief description of a process: children seldom need to rely solely on what they can store away or find out on their own or from the teacher. Much of the course is dependent upon the interplay of ideas and sharing of learning among youngsters as they begin to explore the course materials. Children who may have more difficulty with written expression have ample opportunity to view or listen, and if the teacher follows lesson suggestions, to express their own thoughts, through small and large group discussions. Because the child does not have to depend solely on the written word, that word becomes less threatening and all-powerful; the child can relax and browse through the booklets, recognizing words from the new vocabulary he is acquiring, and all in all, view reading as a more pleasurable activity than previously.

In addition, the vivid and pertinent illustrations that accompany almost all of the reading material help the child with less reading ability to tie visual images to ideas expressed in words. Teachers often have "read-aloud" sessions among the class when a new booklet is first introduced. As new and sometimes difficult words are discovered, time is given to developing some confidence in their pronunciation and meaning. The words are then used in describing the pictures and illustrations in the booklet, and again, a pleasurable and reinforcing pattern of usage is set up. One of the most startling impressions, when first visiting a classroom using MACOS, is the consistent and accurate use by the whole class of the extensive vocabulary associated with the course.

What do children themselves tell us about this problem of reading? In a lower-track, inner-city fifth grade class, a girl said the following:

> I have all my books, you know that? She collects everybody's, but I didn't pass mine in. I got them all in my desk, and sometimes when I got free time I take them out and do them over and over.

Another child in this class decided that all the materials should be put in one book, since the teacher passed out the booklets only for the lesson and then collected them, leaving no time for the children to browse through when they wanted to, to absorb the pictures or read different sections.

> If we had everything in the same book, we could, you know, look at it first ..and we could look at whole pages...when the teacher gives out different books, we don't have a chance to look at it...

This child is thinking, evidently, of normal usage of standard texts, many of which the children are allowed to keep in their desks. His desire is for time to enjoy the written materials, and to go back again and again to them. This points to one of the problems with expensive, somewhat fragile booklets: inner-city teachers, and suburban teachers as well, do not feel free to permit hard student usage, since they wish to re-use them for several years. This partially defeats the purpose of creating such attractive booklets.

A boy in a 5C track in the same school argued against the opinion that all material should be put into one book:

> ...because when you get to the book, every time I get a new booklet, I get excitement to see what's in it. And then when I get one book, I'll know what's all in it, so then when we start reading about it, I'll understand it good enough.

The idea of a manageable amount of material within the confines of one booklet seems appealing to many youngsters. This theme we heard frequently in the interviews: smaller booklets had a self-containment that made them very attractive. The booklets seemed to define a certain body of information that could be grasped as an entity and thus made manageable, as was the intention.

The economic problems of inner-city schools must be viewed as they reflect on learning and the climate in the classroom. Another child in a bottom track, inner-city fifth grade made the appeal for availability, tying this to his own problems of reading comprehension and vocabulary mastery. After the child had described problems with word meaning, the interviewer asked:

> (How could you do it so you could understand it a little better?)
>
> We wouldn't have it in drawers, and he'd let us sometimes sneak one of the books over and read it. Before, we had a book with different colors and like that, that had some animals from Africa and fishes and like that...

This boy also gave an example of the power of film to convey materials that can be difficult for inner-city children to grasp through reading, especially when the classroom climate is seen in the light described above -- withholding, secretive, restrictive.

> I like watching pictures...(in the books) I think I learn what it says, but sometimes I don't understand some of the words, so I skip it....

The yearning for competence is mingled here with a conglomeration of variables affecting learning: school climate and student population; teacher expectations and style of handling the classroom. There do seem to be necessary compromises. Without totally sacrificing the aesthetic qualities and self-containment of the booklets, general classroom availability during school hours should be possible.

> Sometimes when we ain't got nothing to do and some of the kids would like to ask him can we look at the salmon book, but he would say no, on account of everybody would want one.

Are the children aware of the aesthetic quality of the booklets, and if so, does it matter to them? Students in a 5C class (next to the lowest track) in a city school, having finished the salmon and moved on to the herring gull, were asked if there was any one booklet they liked to look at better than the others:

> Girl: The one we got now, there's three books in it, and it's smooth on the outside, and it's green.
>
> Boy: It's got Gull Behavior, Part I and Gull Behavior, Book II on one part, and over here it says "The Gull."
>
> Girl: And it has a cover, and you put it in it and close it. And it's so smooth and green, with a white herring gull.

These children are expressing, in budding critical fashion, an appreciation for the feel, the packaging, the coloring, the layout, and the design of a set of written materials. Obviously, the texture is pleasing to them, and the picture of the gull conveys a beauty that would be clearer to the reader hearing the girl's tone of voice. These youngsters are also trying verbally to express a sense of satisfaction with the feeling of definition and enclosure provided by the sections and titles. Children do appreciate the written materials and their design and beauty, but generally are not given sufficient opportunity to touch, browse, reflect.

Reinforcement and Selectivity: Factors in Learning

Two types of psychological factors in learning seem strongly operative in MACOS. One, an instrumental factor, is exemplified in the Man and Other Animals unit by the amount of reinforcement of an idea or concept through various media of presentation, accompanied over time by repetition or saturation of themes. The other, an emotional factor aroused by content, is exemplified in students' responses, particularly to materials in the Netsilik unit.

In Man and Other Animals, the emphasis is on a few main concepts -- e.g. life cycle, parenting, behavior (innate and learned responses) -- repeatedly explored through several animal studies. The information and ideas are open to investigation through manipulative activities, verbal expressions, and visual images. The organization of a baboon troop, for example, is described in a booklet, viewed on film, and re-created in a class exercise of cut-outs and labeling. This leads, we have found, to accumulative learning. Where this pattern of reinforcement was developed, the most consistent learnings were shown in the test situation.

The Netsilik unit, on the other hand, is much more topic-oriented in its considerations, and the different media present a good deal of material discrete to each mode. There is some overlap, but to nowhere near the degree we find in Man and Other Animals. In addition, the unit does not continually reinforce or interpret a few basic themes. The unit, in effect, follows the Netsilik around the yearly cycle of life activities, interspersing specific skills topics, such as diagramming and categorizing, among the more narrative, descriptive, or interpretive investigations. It is organized around a life style, with all its embedded, resonating qualities. The total environment -- physical and metaphysical -- is explored. The unit does not, for example, spend several lessons focussing solely on the caribou as earlier material focused on the salmon. The unit demands more synthesizing on the part of the student, as it contains a greater range of materials than the earlier unit. Yet too often, it receives shorter shrift in class time -- a flaw in the pacing of the year's work. Seldom, too, does it pick up conceptual threads from the first section for comparative analysis.

This holistic approach provides more chance for selective learning to come into play, depending upon the material that evokes most response, either in itself or by its use in the classroom. As we consider the interviews, we cannot help but realize the emotional power of the Netsilik unit. There is much evidence that the records, films, and written materials of the course are striking very deep, personal chords of response in the youngsters. Each is selecting from the stories and films details that build to his personal interpretation of Netsilik life and its meaning as part of human existence. In a very real sense, the materials form a long narrative, a long tale about the lives of a people in the tradition of story telling.

The many classroom exercises that deal with instrumental matters -- tool-use, graphing of family relationships, etc. -- seem to be viewed by youngsters as peripheral to the great central story line: myths of beginning times and accounts of people's relationships to one another, of growing up, of work, of love, even of madness. We encounter in the Netsilik unit the age-old power of stories to convey human attitudes and feelings.

John:	The book I liked best was On Firm Ice.
Interviewer:	What did you like about that?
John:	We liked the stories, I guess. Yeah, that's the one that had the story in it. Here it is right here,, when the guy went crazy.
Peter:	They were kind of exciting, in some parts ... when they had the fight, it was kind of funny, cause when you usually fight in boxing, you just go and hit each other whenever they want, but the Netsilik, they just take one slug. Then the other person gets a turn.

We were obviously not testing at this global level; what objective test would dare poke its nose into these fluid, focal arenas of human life? Each child remembered different stories, but those that each remembered were recalled in stunning and accurate detail and usually with the little moral or interpretive fillip retained at the end, as in the stories themselves.

The visual input in the form of films worked again at a detailed, imaginal level, where the children return example after example of remembrances of happenings in Eskimo life and relationships, based on what they saw in the films. The material that is expressed repeatedly in several media generally does not comprise a topic that is of the highest order of importance in the unit. For example, building an igloo is explored in many ways early in the Sea Ice section. Children have several sources of reading on building the igloo; they see a film of the process and have a class discussion of this adaptive living arrangement. The work forms part of an explanation of a way of life. The children then go on to a variety of other explorations. The reinforcement, strictly speaking, is concerned only with igloos. Yet the topic of the igloo does not, in itself, form an overriding conceptual thrust in the unit, in the sense that it is not an organizing idea, as is learning or parenting. Selected family behaviors are not reinforced and emphasized by clearly overlapping modes of presentation, as the igloo is. Some are brought out through film, others in stories or plays. This, of course, is more natural, more human. But it does mean that selective learning occurs rather than the more consistent body of information that grows in Man and Other Animals.

An Experiment in the Use of Film Loops

"We can grow up now."

As an experimental activity during the field testing, children in a few classes worked with film loops. Baboon footage served as data for raising questions and searching for evidence about various behaviors. Youngsters worked with 8 millimeter film loop projectors, viewing the footage independently or in small groups. To evaluate this use of film, an interviewer visited a classroom to have a conversation with the whole class (teacher absent) about their response to the loop project. The activity they had carried out involved a listing, prior to any viewing, of questions to which one might search for answers while watching loops on baboon behavior in the natural habitat. After a first and second viewing, the children were to add to or re-write their list of questions. It was hoped that along with review of their questions, this lesson would help students sharpen and deepen the nature of their inquiries.

Some examples of the class's conversation with the interviewer follow:

> (What kinds of questions did you have before your first viewing of a loop?)
>
> ...Like, where they come from, how old are they when they die.
>
> ...And also, we wrote up questions when we first started on baboons. When we first saw our first film, we wrote up questions, then half way...then after we had seen a lot of films, then we wrote up some more questions.
>
> ...And after the end, we're going to answer them all.
>
> (Did you learn anything about the kinds of questions you asked before you saw the films?)
>
> ...The second questions (we had) were harder than the first questions. The first ones we know already, and the second ones, you know, they were a lot harder.
>
> ...The first questions were dumb.

> ...They were, because you could answer them right off. The second ones were hard.
>
> Yeah, like, the second ones were, "Do they walk in their sleep? Do they have dreams? and all that. They were much harder.
>
> (What do you think about looking at films that don't have narration and where you don't even know what to expect?)
>
> You can imagine what they're doing.
>
> Well, you can see what they're doing. If you don't know what they're doing, you write it down and find out later.

These comments reveal:

1. Their use of questioning as they observe and work with the loops, and their serious approach to viewing.

2. Their understanding of their own growth over time after using these materials -- the change in difficulty level and import of their questions.

3. Their awareness of their thinking process as they use the film loops.

They go on to discuss with the interviewer films in general. It is noteworthy that such a discussion could occur in a fifth grade class with a stranger walking in and asking a large group questions which they could have ignored or to which they could have given silly, "expected" answers.

> You can get more of an idea of what they're doing (through films). When you're watching the films, you know what they're doing, but if you don't see any films, it's just like looking in the sky.
>
> (Do you like long or short films?)
>
> Long! ((From many voices.))
>
> They take up more time.

Yeah.

You can make more observations.

You can get more information.

There's more in it.

In films, though, you watch them, whereas if you keep on reading books, you get bored and you just don't listen sometimes. You just sit there, and, you know...

It's better to have watched the films, and later on you can read the books, because we like to do a combination. We watch films, and we do read books.

And also, I like short books, because long books, they take too long and you get bored with them. Short books, they're not too long, and you don't get bored with them.

(The last question I wanted to ask you was, while you were doing this, would you have preferred to have someone guide you more? Would you have preferred to have your teacher ask you more specific questions?)

I like it better this way, because you could go along at your own rate.

Yeah, you can feel independent.

Well, sometimes, I mean, she just goes over things you've already learned.

We can grow up now.

Notice in these comments the following dimensions:

1. A developing methodology focusing on observation and evidence-gathering through the visual medium;

2. An understanding of the complementary roles of films and booklets; and a desire for longer films and short booklets -- a common desire among youngsters. Teachers often wonder if youngsters do expect to learn from films or regard them simply as "fun," a diversion from the serious business of education. The manner in which this class responds to film materials would seem to indicate that school can be both "fun"

and intellectually important at the same time;

3. Liking for independent work away from constant supervision by the teacher (and this was an exceptionally open, project-oriented teacher, it should be noted); and an assertion that they feel able to accept some responsibility for their own education.

It appears that this use of loops is a fruitful activity and merits further use in the course.

Other Issues of Media

The personalizing of knowledge seems to be one of the few unfailingly powerful motivators of learning. DeVore's notebook of a field anthropologist is the most popular piece of reading in the Man and Other Animals unit, despite its length. Here is an interesting juxtaposition of learning styles on the part of the young: at about 10 years of age, they are devourers of factual information, staggering retainers of bits and pieces of fact on the one hand, while on the other, they take enthusiastically to materials that convey a sense of human involvement in a process of problem-solving. One child said of DeVore's field notes:

> It was someone else's ideas on the same thing we are studying. It wasn't just the facts.

Too much of current textbook material is deadly, precisely because the personality of the writer is conspicuously absent. The film showing Jane Goodall's work with chimpanzees is remarkably successful in capturing the attention of children, because it has a main character, Miss Goodall, shown pursuing her work and serving as a role model not only for boys in the class but also for countless little girls who can now imagine themselves climbing trees to adventure. The idea that girls as well as boys can participate in important scientific work is given visual reality by this film.

Realism is an important factor in children's assessments of materials of the course. Their common preference during the Man and Other Animals unit was for photographic or realistic illustrations of the materials. One boy asked:

> Do they have more pictures on the baboons? All they have (now) is sketches and drawings. I like the real pictures. It gives a real touch to the whole thing.

Children do not, however, have an indiscriminate preference for "realistic" representation. They recognize different forms of reality in presentation. It deserves mention that the imaginative art work illustrating some of the Netsilik booklets on beliefs and myths appealed to the same youngsters who asked for more photographic material in the animal studies. This shows an appreciation of an important distinction in the two topics -- the one deals with observable behavior; the other is an expression of the human spirit.

In very bright classes or groups of youngsters, the repetition of idea and information occurring in the booklets often becomes a point of criticism. The interviews and evaluation devices seem to promote critical analysis of the materials:

> I wrote on the test at the end that I don't think you saw kids as smart as they are. Like on the print you use -- you use the printing to help convey the meaning. Well, I don't think you need to. It is good material, but everyone can see that baboons go around in circles, and you said this several times in the book, so I don't think that you have to repeat it.

Such astonishing analysis comes from a fifth grade girl in a bright suburban group being interviewed about the Man and Other Animals unit. It is evidence of the diversity of opinion supported in the course that another child disagrees with her remarks:

> No, I don't think so, because it is very, very understanding, and it doesn't hurt to repeat it. It will just let you know, the more the better.

The teacher of these youngsters commented specifically on her childrens' attentiveness to the format and design of materials.

> When I first handed out the booklets on the "Life Cycle" and "Structure and Function", they commented on how very nicely everything was presented. That is, the drawings, they were very impressed with.... I was a little surprised that this was the thing that they would pick up.... It isn't often that the children will comment on the fact that the drawings are done in such a delightful fashion. Ever since then they've always noticed.

While it is difficult to tie specific increments of learning to these global, aesthetic responses, such awareness on the part of youngsters suggests at a minimum that their attention is focused on the materials they are to use, and that the art work, illustrations and booklet style contribute to a "good feeling" -- a positive valence -- toward the booklets.

Interviews with Teachers and Students in Control Classes

During the school year 1968-69, classroom observations and student and teacher interviews were conducted in five classrooms using a social studies course other then MAN: A COURSE OF STUDY. The purpose was to determine what differences, if any, distinguished MACOS from other social studies classrooms. Each of the classrooms was located in a different school in three small cities in the Boston area. Four of the schools were public, and drew students largely of middle and working class background. The fifth was a private school with students of middle and upper middle class background. The non-MACOS teachers who were studied represented two extreme styles of teaching. On one end of the scale were four public school teachers[1] who used a traditional and structured approach to achieving their curriculum objectives. On the other extreme was a private school teacher who worked with a school-developed curriculum, and experimented with classroom techniques.

The four public school teachers had much in common. All, by coincidence, were presenting the same subject matter to their classes: the United States, its history and geography. They played a central role in their classrooms, working with their classes as total groups, and focusing lessons on readings from a single textbook followed by teacher-led discussions. They rarely, if ever, broke their classes up into small groups for discussion and explained their reluctance to do so in a number of ways:

---

[1] One of these four teachers did use MACOS in anthropology-science work with her class, while continuing to use the system's regular curriculum as social studies.

> I can't do much group work or we wouldn't get much done. I think we should at least get through our country. Nobody is pressuring me; actually, it is me who is pressuring myself.
>
> I have not been successful with working with small groups. Not as successful because I find that they waste a lot of time and they don't go into things as deeply unless you have a very homogeneous group.... They just don't seem to get the meat out of it when they discuss it in groups. Certain things they can -- report type projects are easier because they all divide up the materials and they can discuss what they want to do. They just don't seem to get the things I want them to get out of it when they discuss things in small groups.
>
> ---
>
> With most of them, grouping is very good, but there would be about four of them that just don't seem to be able to work in a group.... They disrupt the class. That is why I don't have too many groups.

These teachers were saying several things about grouping: First, they didn't feel the same amount of control over the material being covered that they felt when they used the more familiar method of having youngsters read specified sections of the material in their presence and then respond directly to questions so that they had a way of knowing that all students had at least been exposed to the same information by way of carefully guided reading and discussion.

Second, they were concerned with the problem of classroom management and more specifically with the question of how one totally involves all the members of the class so as to avoid disruptions of a disciplinary nature.

And third, they were not certain that youngsters learn as much under less traditional (and for some teachers, less familiar) circumstances.

All of these factors were compounded by a fourth factor which seemed to be a sheer lack of exposure to the use of innovative methods. Several teachers talked about their dissatisfaction with their present teaching methods and of their desire to change, but they indicated their lack of familiarity with newer approaches such as grouping. As a result, they found themselves reluctantly resorting to methods with which they were more familiar, exposing their students to as much information as they could, in spite of the fact that their students seemed to view social studies as a chore, deriving little pleasure from it. One gets the feeling when reading their interviews that they want to change, but they simply do not know where to begin. Here is how one teacher expressed her dilemma:

> (Have you got any feelings about the way in which you might want to teach some of these things.... or are you pretty much satisfied the way it is now?)
>
> No, I'm not satisfied. The thing is that you have to have time to think about new ways of doing things. There are better ways, I am sure, maybe smaller classes. We do group sometimes, but I have three classes coming and going so I can't do much group work....

Another teacher seems to be confronted with a similar problem:

> In general, (my students) aren't too fond of (social studies) which disappoints me because I am really fond of it. (Do you see any reason for this?) I think it is because of the reading. I know there are a lot of other approaches that could put aside much of the reading in social studies -- they could work on projects all the time -- but I feel that in order for them to talk about something they have to know some of the facts, have some kind of background. So I think that it is important to have a book as a reference and most of them find it a chore to read. I think this problem is a good part of it.

Providing their students with a variety and quality of audio-visual materials was a very real problem for these teachers:

> (About how often would you guess that you use some kind of audio-visual aid?) ... quite often ... (How do the kids react?) Depending on the material, they can be bored by it. If it fits in with what they are talking about I like it better actually and they do too and that is why, something like this, I will use the individual viewer because this has nothing to do with what we are studying about but it is in the course of study and I'll never get to it. But I figure they can learn something from it now. It gives them something else to do; they enjoy it, another point of view, something else to look at. I enjoy using film strips and movies if we get them at the right time; if they supplement and enrich what we are doing; otherwise, they are really useless.

In addition to the lack of relevancy of much of the materials available to them, the problem of out-dated films was also present.

Individual projects or reports were assigned by this group of teachers for extra-credit or in addition to the daily class work; they were rarely used as an integral part of the regular on-going classwork. Because of the way in which such projects were handled, and because of the relative lack of relevant audio-visual aids, the course of study was fairly predictable. One youngster described it as follows:

> Well, we do it by groups of states, like the Southeast states, the Middle Atlantic states. First we start with their history and how they were founded, and then we move up. Usually we have manufacturing, how it got started, and we use a lot of maps showing the products and everything and what different crops they grow there.

Student descriptions of their classroom experiences reflect a picture similar to that depicted in the teacher interviews. The direction of questioning is clearcut:

> Sometimes we ask questions but mostly the teacher asks the questions because she asks the questions that are on the sheet and then the kids answer from what they have.

And the scope of classroom discussions is fairly well delimited by the mode of teaching:

> Oh, she asks questions and we answer and she tells us things and later we have to tell her what she already said.

The teacher knows the right answers.

As a result, other subjects seemed to be preferred to social studies. In one class, one girl preferred arithmetic to geography because:

> ...in geography, you can't figure things out. You have to read instead.

In another classroom, where the same teacher taught MAN: A COURSE OF STUDY in addition to the standard school-developed social studies curriculum, students preferred MACOS to social studies because, unlike their social studies class where they worked as a whole group, in MACOS they were given more opportunity to express their ideas through small group work. Their comments are especially interesting because they indicate that the teacher has apparently not shown carryover from MACOS in her regular social studies class.

(When you are in social studies class...do you work in small groups?)

Boy 1: Just the whole class. Not in groups, but the whole class.

Boy 2: In anthropology we work in groups of four, and stuff. We have our desks arranged and....

Boy 1: ...it's easier to discuss different things than it is with the whole class.

Girl : Because if you have something you don't know, it's good to know other things besides, that you don't know, and it's good to hear it...

Boy 1: I know, the other way you just keep it to yourself and say, "Well, I'm not going to tell anybody else about it..."

Boy 2: I know. In a way it's something like any other thing. If you're telling somebody something, they'll usually want to hear what it is. Like, at first they'll say, "No, your idea is no good;" then they'll get around to, "Okay, what is your idea?"

As they reflect on the processes of small group interaction, these students reject the passive, isolated role they play in their social studies class, and reveal the interest and excitement that they feel when they become involved in small group discussions in their MACOS class.

The content of the private school teacher's program, the Middle Ages, was different from that of the other non-EDC teachers and unlike the other classroom teachers, she used no one text. It was her practice to read from a variety of sources to her students, or else have students do reading on an individualized basis, working independently or in small groups on a variety of projects.

The teacher was concerned that the course be relevant to the children's interests.

> I think that on the fifth grade level kids are very interested in fantasy but they are also getting interested in realistic approaches to today. So if you can use the past to bring out the present, it is desirable, but if it gets to be escapism, that is not good. I sort of think that by the sixth grade, at least, you should get into things more relevant. I don't teach it because I think that the Middle Ages are important for kids, if you see what I mean.

She did not feel compelled to cover a specific amount of pre-selected materials over the course of the year. Because of the importance she placed on student concerns, she was quite willing to digress when students raised issues only tangentially related to the topics under consideration.

> I hardly ever say, 'we'll wait on that till later'-- that can be absolutely crushing...

Her focus was primarily on conceptual learning and what made for a good discussion in her terms was:

> ...kids feeling free to make educated guesses and make their own conclusions. Not just listening to me; in fact, having me out of the discussion... I think that almost everyone in the class has reached the point where they realize that in most of the things that we talk about there is no right answer. I spend a lot of my time convincing them that if they think clearly and follow their trend of thought, they can make their own conclusions and maybe even make a guess, a wild stab at something, and even come up with something that is valid. So I use discussion a lot.

What were the themes she wanted her students to come away with?

> In terms of the actual themes, a lot of the discussion we have is about cause and effect in history; what caused what, what was the effect, what people's motivations are for doing things. We discussed war and peace a lot... what makes man do the things they do.
>
> Sometimes we get down to just the way of life of a particular people and how it is like or unlike the way of life we have today. Like in the Middle Ages, the social strata is something we concentrated on... and I guess history repeats itself. I let it just go and sometimes they get off on really wild tangents on pacificism...

In this classroom changes in activities were related to changes in subject matter and, therefore, occurred after long periods of time, rather than on a daily basis. The reason for this seemed to be due to the teacher's interpretation of the course as it had been designed at this school:

> The basic thing is that the course is supposed to be a combination of history, social studies, sociology, psychology, English -- all these things put together. You don't split up the day into a million different sections, so you can do art projects related to the historical period, compositions, anything.

On her students' reactions to this approach, she said:

> I think that they realize that there is always going to be a variety of things so that if we do some very structured stuff for a couple of weeks where we study castles, for instance, and have some quizzes on it, they are not so intolerant of it because they know that next week we may be doing an art project...

Only one film was shown during the entire school year in this classroom because there are not many available on the Middle Ages.

What were her students' reactions to this kind of program? In interviews, they spoke of the following:

1. They enjoyed small group work because of the help they were able to receive from classmates and because of the greater opportunity they had for expressing their ideas.

> ...we can work in two or if we're doing a project maybe four or two. I like it better in groups because, you know, it's just, you're mostly being paid attention to when you work in groups because you don't have to listen to the teacher and get interrupted and you can get more help out of it that way. One person can come up with a suggestion and you can get done faster and have a bit more fun.

2. Their responses suggested that what appealed to them most was their active involvement in classroom activities.

3. And there was the feeling on their part that their opinions and ideas had value. One senses that there was a relaxed and close working relationship between students and teacher.

> Well, sometimes I think the kids have much better points than Miss W..... . Sometimes I think she has better points. She usually has better points but they can come up with them also.

4. They would have preferred to see more films because they felt films give more information and are more authoritative than books and words.

In many ways, the characteristics of this classroom reflect those found in many MACOS classrooms: the use of small group work, the active role of students in classroom activities, and the focus of attention on students and away from the teacher. In some ways, however, this classroom is different from the MACOS classroom. It lacks the wealth of audio-visual aids and the frequent change in rhythm created by a variety of activities so characteristic of MACOS classrooms.

Non-EDC students were asked several questions related to MACOS content. One of the questions was: "If you wanted to learn more about the squirrel than you already know, how would you go about it?" This question was directed at both EDC and non-EDC students and was intended as a measure of the extent to which MACOS contributed to the students' understanding of scientific observation as a process they might utilize. Non-EDC students on the whole stated that they would seek further information in books, especially the encyclopedia. Very few non-EDC students indicated that they, themselves, would do any sort of experimentation on their own. Non-EDC students saw a great distinction between the way scientists would find out about the squirrel and the way they would learn about it. The number of MACOS students who in interviews responded to this question by choosing and describing the observation method was not remarkably great. However, those who did so showed a much greater understanding of the process than did non-EDC students. Although they sometimes felt they did not have the resources (usually financial) to set up the kind of observation projects which they envisioned, they did view less elaborate projects as being within their range of possible activities. Non-EDC students, on the other hand, tended to think of the observation method as being restricted more to the scientist's use.

A second question that we posed sought a definition of behavior. Most of the non-EDC interviewees interpreted behavior as being something which is either good or bad in terms of conduct, but were unable to give a broader definition. A few students were able to give rather good beginning definitions but when they elaborated on their answers, they showed a lack of understanding of the term. Particularly noticeable was their confusion about the differences between innate and learned behavior and their inability to use behavior as an organizing concept when thinking about different animals.

When talking about the differences and similarities between man and other animals, non-EDC students responded largely on the basis of physical characteristics. Some touched on the idea of communication, but used it as an example of something man and other animals have in common, in an anthropomorphic sense. None of their responses revealed the same kind of insights that were present in responses of MACOS students to similar questions.

Our experience in these classrooms suggests some general themes which seem characteristic of non-MACOS classroom situations. Students in these classrooms said they preferred a setting in which they played a fairly active role in a variety of activities, particularly one which allowed them to freely explore new ideas with each other and with their teacher. The majority of these students, however, found themselves in a restrictive environment in which they were expected to play a relatively passive role. Further, all of the non-MACOS teachers, of whatever teaching style, complained of a lack of audio-visual resources related to the materials they were teaching. What films or filmstrips were available were said to be out-dated and, even then, often not available at the time when they would be most relevant for classroom use.

These themes, drawn out of student and teacher interviews, corroborate findings based upon observations in these control classrooms. Descriptions of these class sessions are presented in the section of this report, In the Classroom: Observation Findings.

The Hunting Games: An Analysis of Learning by Simulation

Games are a relative newcomer to the American educational scene; judging from the number produced during the past few years, one would think that this type of classroom activity was already a tried and proven technique in education. This is hardly the case, as any cursory review of the existing literature on games will reveal. The studies presently available suffer from one or more major limitations, so this project was undertaken, not only to study the effectiveness of two Caribou hunting games, but also with the intent of contributing generally to research in the role of games in American education.

The idea behind using games as instructional devices is very simple. For some reason, large numbers of people are willing to expend countless man-hours of time and enormous energy to master the intricacies of many popular games. Furthermore, this drive for mastery exists regardless of the irrelevance or lack of generalizability of the skills which must be learned. Most people know ahead of time that they are not likely to become good enough to derive much practical value from knowing how to play (i.e., few make their living from playing games). Yet they still will work at becoming better; they will seemingly try to learn almost anything if it will help them win.

If game-players exhibited similar behavior with respect to classroom learning tasks, they would be termed "highly motivated." The notion of using games as instructional devices involves attempting to link relevant and generalizable learning to games in place of the present irrelevant and non-generalizable skills. By developing games in which mastery of school learning tasks is essential for competent play, the "motivation" associated with games would transfer to school tasks, and more and better learning would take place.

Two Types of Instructional Games

There are two major ways of linking games to learning. One is to take an existing game which everyone understands and graft subject matter onto it. There are numerous simple "game models" which can be played with school tasks as the required behavior. They range from giving a point to the first one to finish a given task (a speed game) to Twenty Questions, Hollywood Squares, Charades, College Bowl and any other game one is clever enough to adapt to school learning tasks. These games are termed "motivational games," as the game is quite deliberately irrelevant to what is to be learned and is used simply as a motivating device.

The other major way of linking games to learning is to take a model of some social process and make it into a game. Usually this involves only attaching some kind of scoring scheme to the actions of the players as they play various roles in the social process. Such games are termed "simulation games." There are simulation games based on models of such situations as: labor-management relations, legislative process, political party conventions, parent-child relations, and competition for careers, to name just a few.

The hypothetical mechanism by which a player learns from a simulation game is well characterized as follows:

> Each simulation is built around a theoretical model. The model makes it possible for the simulation participants to encounter "reality"; they make decisions which are "fed into" the model, and the model produces "feedback" for the participants outlining the consequences of their decisions. In each of several time periods, there are similar cycles of planning...deciding... putting the decisions into the model...receiving feedback from the model...and beginning a new cycle with planning, etc.[1]

A simulation game, thus, is a context in which a student can try out his ideas, translate his verbal learning into overt actions, and find out the consequences of his actions. The critical feature of a simulation game is the validity of the simulation, the validity of the model. It must provide for actions by the players which are as similar as possible to real actions in the actual situation. It must provide feedback recognizably linked to an action and qualitatively similar to that of an analogous action in the real situation. The point system, if one exists, is used merely to increase the clarity of the feedback or to adjust the feedback to compensate for unrealistic aspects of the model.

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[1] NAPOLI (La Jolla, California: Western Behavioral Sciences Institute, 1965).

In contrast to the motivational game, the simulation game involves the interaction of several variables at once, a cumulative series of interactions over a series of rounds, and usually a variety of possible ways of acting, not just one which is judged right or wrong.

Games as Curriculum

Games have several unique properties as a medium for instruction. While films, for example, can be stopped or started, while students can participate vicariously in the action by identifying with the actors, while children can discuss the nature of the medium -- why the photographer chose this camera angle, why this time of day -- the children cannot take part in and control the action. They cannot try making their own version of a film and see whether it created a more powerful image than the one they were given. For all their power, the other media remain essentially linear in their action, and the action remains outside the control of the students.

In games, children are part of an on-going process. What they do affects the outcome of the game, and they can experiment directly with the nature of the medium by changing the strategies or the rules of the game to see which approach "works" better. The essence of the simulation games' contribution to a curriculum is that for the first time, the children have to take the factors they have studied independently as static entities and deal with them as parts of a process. They have to manipulate and coordinate the variables simultaneously over a period of time, under the tension and excitement of the game. They must use what they have been taught in a new and inter-related way. Frequently, the games do not add new knowledge so much as they integrate and make functional that which has already been learned.

Games in MAN: A COURSE OF STUDY

The first section of MACOS approaches the general objective of identifying what makes men human by considering the behavioral and morphological differences and similarities between man and certain other animals (salmon, herring gull, chimpanzee, baboon).

In the second half of the course, the children are confronted with a classic case of the interaction of man and animals through the detailed study of the Netsilik Eskimos of the Pelly Bay region of the Northern Territories in Canada. The section is centered on life in the hunting camps of the people: the "Inland Camp" of the early fall when caribou are hunted; and the "Sea Ice Camp" of the winter and spring when seal are hunted. Each unit concentrates on the interaction of such diverse factors as technology, world-view, social organization, and physical environment in the effort of the people to hunt the animals successfully. The Netsilik are absolutely dependent on these animals for their food, clothing, tools, heat and other needs.

In MAN: A COURSE OF STUDY, three simulation games are used. Two of them are concerned with the way in which the Netsilik Eskimos hunt caribou, the third with seal hunting. The task of catching caribou can be conceptualized as follows: The caribou has a number of physical advantages over man, such as greater speed on land and a much better sense of smell. Man has a number of advantages over caribou: he can see much more clearly; he can plan and change his behavior; he can make and use tools; and by division of labor he can cooperate with other men to accomplish goals which one man alone could not achieve. Since every family of four needs a minimum of thirty-five caribou skins every year in order to survive, man must use whatever attributes he has to overcome his physical limitations and catch the needed caribou.

The Eskimo kills caribou in two ways: by using the bow and arrow, a tool which can kill at a distance and thus overcome the speed and nullify the sensory advantages of the caribou; and by driving the herd into a lake where hunters in kayaks can overtake the swimming herd and spear the caribou. In the latter case, three important tools are used: the kayak, the spear, and the inukshuk. An inukshuk is a pile of stones (a cairn) which looks like a man. These, properly placed, frighten the caribou (much as scarecrows frighten birds) and help to drive them into the water.

Bow and arrow hunting is simpler in conception but does not yield many caribou. Even if the hunters do manage, without frightening the herd, to get close enough to shoot one (and their bows and arrows are poorly made and not very accurate), the herd will flee as soon as one is killed. It is rare that a hunter has a chance to catch more than one in any herd. Driving the herd into a lake (crossing-place hunting) is a more effective procedure but requires considerably more planning and cooperation. Hunters have to be concealed along with their kayaks near a crossing place. "Chasers" or "beaters" have to position themselves in just the right location, so that by shouting and running toward the herd at the proper moment, they can drive it into the lake at the point where the hunters are waiting.

In the lessons leading up to the games, the children study each of the attributes of men and caribou, study the tools available to man, and read about the strategy of hunting with the bow and arrow. Then they play the Bow and Arrow Hunting Game. When they have finished playing the game and have discussed the results, they see vivid films of an actual crossing-place hunt filmed in Pelly Bay. They draw pictures of this hunt, read about it, and even see a diagram of the strategy. At the end of these activities, the children play the Crossing-Place Hunting Game. Both games are played on the same gameboard, and many of the rules are the same for each. The more complex crossing-place game simply involves the addition of rules to handle kayaks, inukshuks, and herd-behavior in or near the water.

Each game is played by three children. In Bow and Arrow Hunting, two play the hunters, while the third rolls the dice, moves the herd, and acts as referee. In Crossing-Place Hunting, two children play the two beaters while the herd is on land, then switch and play hunters in kayaks after the herd enters the water. Again the third child moves the herd and referees. After each cycle of each game, they rotate roles.

Strategy in the Caribou Games

The game is designed so that there is one best strategy. The fact of the simulation insures that the best strategy in the game is directly analogous to the one the Netsilik use in actual hunting, and that the pay-offs in the game are roughly proportional to the quality of the strategy the players use. The game is to serve as a context in which a student can try out his ideas. His decisions are fed into the simulation, and the simulation produces feedback as to the consequences of these decisions. Over several cycles, by making use of the feedback and trying again, the participants gradually learn the most effective actions.

In the caribou games, the players control some of the variables. The object is to learn how to manipulate the variables to maximize the number of caribou caught. Regardless of the amount of knowledge a person has, few adults and no fifth-graders (judging from pilot tests of the game) recognize and carry out the maximizing strategy on the first attempt. Rather, they must play the game by some strategy and see what the outcome is. With the insight from this experience, they then must adjust the strategy (or choose a new one), play by this strategy, and see how many more caribou they catch. By constantly utilizing the feedback from each completed game, a player can gradually master the strategy the Netsilik use in catching caribou.

Such a model of learning demands several things of the game's design:

1. The game must be designed so that learning "how to play" (the rules, the variables the permissible actions) is fast and simple. The players can then concentrate on "playing better."

2. The game must be designed so that the actions of previously completed games are recorded and available for study. This record becomes the feedback for correcting and improving subsequent play.

3. The particular causal relationships between a strategy and an outcome must be clearly identifiable, so the player can determine what aspect of a particular strategy was inadequate.

4. The degree of success in the game (the feedback) must be directly related to the degree of "goodness" of the strategy employed.

5. The game must be designed so that any individual can play the game numerous times. Only then can he gradually improve his play. Whatever the time constraints of the normal use of the game, it must be able to be played several times within that time constraint.

6. The game must be designed to encourage players to experiment actively with different strategies in different games. It must discourage players from sticking with the same strategy game after game.

7. The game must be designed so that every player can play every different role several times to gain the insights of that role. In order to do this, the number of different roles must be kept to a minimum.

The Research Design

This research study was undertaken with several aims: to test the functioning of the games as pieces of technology; to measure the contribution of the games to the overall learning objectives of the curriculum unit; and to evaluate the unique design features of the games.

The Setting

The major evaluation of the games was conducted in twelve elementary schools of a single suburban school system outside Boston. Some were located in very wealthy areas, some in areas comprising those who had recently moved to the suburb; some drew mainly children of professional people, others drew more "working class" children. Class size ranged from eighteen to thirty-two and covered all the sizes in between. Of the twenty-three classes participating, eight consisted of sixth-graders. The remainder consisted of fifth-graders. A total of 585 students took part in the test, all of whom were studying the curriculum for the first time.

Seventeen different teachers were used in the study. Six were in their first or second year of teaching; three had more than twenty years experiences; another four had more than ten years teaching experience. All seventeen teachers attended afternoon workshops twenty times during the year, in which the staff carefully explained and demonstrated each piece of material and technology before it was to be used in class. For the eleven teachers new to the materials, this was their only formal training. However, lengthy and very detailed teachers' manuals were provided, and the EDC staff was available during the entire school year of the test.

The Experimental Data

Test questions were developed to assess seven different categories of learning:

1. Knowledge of the facts of the actual situation. These questions referred specifically to facts about hunting caribou which were covered in the parts of the curriculum leading up to the game.

Each question was used on both a pre-test and a post-test. The increase in the number right on the post-tests was used as a measure of the ability of the games to teach that which was taught but not learned in the other parts of the curriculum.

Operationally, the factual knowledge questions were multiple-choice questions with four possible answers. For example:

> The caribou is better than man in all of the following ways except one. Check the exception.
>
> _____A. Speed of running
> _____B. Sharpness of eyesight
> _____C. Sense of smell
> _____D. Sense of hearing

There were ten such questions.

2. Knowledge of the analogies between the games and the actual situation. The caribou games are highly stylized and symbolic, as are most educational games. The ability of games to teach would seem to depend on the ability of the players to recognize the analogies between the symbolic environment of the game and the actual situation it was designed to simulate. This set of questions was designed to assess the degree to which the analogies built into the game were apparent to the players. In operational terms, these questions state a rule of the game and ask the student to explain why this was made a rule of the game.

The questions were multiple-choice, four item. Each item stated a reason why a rule might be included in the game. The student was to select the best reason. Naturally, since the questions referred to rules of the game, they could only be asked on the post-tests, after the game was played. An example:

> In the game the caribou move three spaces each turn, but the hunters move only one space each turn. Which of the following is the best reason for having this rule?
>
> _____A. In real life a caribou can run faster than a man
> _____B. In real life a hunter has to walk slowly so the caribou won't see him
> _____C. In real life a hunter doesn't move very much; he waits for the caribou to come to him
> _____D. The rule is not at all like real life. The game

> wouldn't be any fun if the caribou didn't have a chance to escape.

There were seven such questions.

3. Knowledge of the structure of the game. This category could equally well have been termed "knowledge of the underlying model of the game." Game designers often want the participants to gain knowledge of the theoretical model underlying the game. This set of questions was designed to assess this kind of learning in the caribou games.

Operationally, these questions asked the students to predict the effect of a rule change, or of a new rule, on the outcome of the game. The notion was that if a student understood the underlying model of the game, if he understood the variables and their relationships to each other, he could predict the outcome of a change in one of the variables. In a general sense, knowledge of a theoretical model means the ability to make predictions based on a change in one of the variables in the situation.

The students were asked to indicate whether a given rule change would make it easier or harder to catch caribou. Not all of the rule changes have a direct analogy to the actual situation, although a good discussion could certainly arise as to how to bring about an effect in the actual situation analogous to the proposed rule change in the game. For example:

> The following is a list of possible rule changes in the Bow and Arrow Hunting Game. Place a check beside all of those changes which would make the game easier for the players (which would help them catch more caribou.)
>
> _____A. Eliminate the wind
> _____B. Have the caribou move only two spaces at a time
> _____C. Have the wind direction change at various times during the game
> _____D. Make the hunters play fast, say a move every ten seconds, so they would not have time to plan their moves
> _____E. Make the hunters start closer to the lake
> _____F. Have the caribou move five spaces at a time
> _____G. Have the hunters move two spaces at a time
> _____H. Permit the hunters to kill a caribou if they get within two spaces of the herd
> _____I. Always have the herd flee South after it is frightened

_____J. Have three hunters instead of two

There were twenty-one such questions, counting each possible rule change as one question. Again, these questions could be given on post-tests only.

4. Ability to tell directions. This set of questions was quite specific to these games. The gameboard includes a compass, and the game requires accurate determination of directions from all sides of the board. Consequently, the game should teach students to tell directions. Operationally, the questions involved reading a compass when only North was marked. The questions were used on both pre-tests and post-tests. The increase in post-test scores was taken as a measure of how well the game taught them to tell directions. An example:

> If North is as marked in the diagram below, which arrow points to the West?
>
> _____A. Arrow number 1
> _____B. Arrow number 2
> _____C. Arrow number 3
> _____D. Arrow number 4

There were eight questions in all.

5. Knowledge of the strategies of the game. Eskimos use a particular strategy to catch caribou. The game was designed so that the best strategy for catching caribou in the game was directly analogous to the strategy used by the Netsilik in actual hunting. These questions were designed to assess what the students see as the best strategies based on their experiences in the game.

Operationally, the questions involved a statement about how the game should be played (a strategy statement) with a rating scale beneath. Students were asked to check how strongly they agreed with the suggested strategy. For example:

> Inukshuks should be built in a line, not scattered in various parts of the board.
>
> STRONGLY AGREE_____,_____,_____,_____,_____ STRONGLY DISAGREE

The questions involved a mixture of good and bad strategies. There were nine such questions in all. These questions, obviously, could be used on post-tests only.

6. Perceptions of the game. In any game, there are a set of factual relationships in the functioning of the game which are not given in the rules. It is important, however, that a player perceive these functional "facts" for what they are. Otherwise, the decisions he makes may be quite erroneous. For example, in the games the caribou here always is constrained to move in a southerly direction. It cannot move North. The dice do not permit such a move. However, if the players do not perceive this "fact" about the game, their strategies may depend on the herd turning around and going North.

In operational terms, these questions involved a statement about the games, with a rating scale beneath. Students were asked to check how strongly they agreed with the statement. An example:

> If the herd gets past the Beaters (south of the Beaters), they cannot catch up to frighten it.
>
> STRONGLY AGREE _____,_____,_____,_____,_____STRONGLY DISAGREE

The questions involved a mixture of true and false perceptions. There were six questions in all. Again, these questions could be on post-tests only.

7. Attitudes toward the games. These questions were designed to elicit attitudes toward the game experience, toward what they learned, toward the role they played in the game, and toward the problem of Eskimos trying to catch caribou.

Each question consisted of a statement of feelings about the game, with a rating scale beneath. Students were asked to check now strongly they agreed with the statement. For example:

> I liked playing the games better than anything else we've done in studying the Eskimos.
>
> STRONGLY AGREE _____,_____,_____,_____,_____STRONGLY DISAGREE

There were five questions in all.

The questions were validated in several ways. First, there was agreement among the EDC staff that the questions were relevant to the rest of the curriculum and its learning objectives. Second, every knowledge question had a right answer in terms of the game, and there was independent agreement among the EDC staff as to the right answers. Third, the questions were tested twice in pilot tests of the game, the results item analyzed, and corrections made in the wording of any question which seemed to cause confusion (i.e., on which a great many children checked a response which was "wrong" in the eyes of the developers).

The nature of the games is such that learning objectives other than knowledge were highly unlikely. Very few of the overt behaviors of the roles (indeed, none except the general need to cooperate and plan) were part of the game, so increased affective identification with the Eskimos would have been surprising. Nor were the games designed to give the students insight into themselves. In short, the games were board games designed to illustrate symbolically a pattern of interaction between man, animals, and environment. The game was designed carefully to achieve certain cognitive objectives. Other types of learning for which other games might be appropriate were systematically excluded from these games; thus, the questions used in this experiment focus almost entirely on knowledge gained, and particularly on knowledge of the games themselves.

Other Data

Analysis of the game sheets was limited to the second of the two games, the Crossing Place Game. In Bow and Arrow Hunting, there is very little in the way of an overall plan or strategy, so rating the game sheets as to quality of play is virtually meaningless.

In Crossing Place Hunting, however, there is clearly a "right" answer. There is an overall strategy which produces a maximum kill on every play. Consequently, it is possible to rate the quality of play by how closely it approximates the best strategy. Over the sequence of plays, the players should improve the quality of their play. This "quality of play" should be closely proportional to the number of caribou caught, and a measure of this relationship should provide a measure of the quality of the design of the game. A rating of the actual quality of play will permit studying the relationship between performance in the game and learning as demonstrated on the tests.

The Experimental Conditions

A unique design feature, and the one most closely related to the model of learning on which the game is premised, is the visual record sheet of past performance in the game. The contribution of this design feature, both to performance in the game as measured by ratings of the games sheets and to performance on the post-tests, was one focus of the study. In a larger sense, a study of the contribution of the record of past performance is a study of the role of feedback in improving performance and learning in a game.

Secondly, the caribou games were based on the notion that a player must actively experiment with different strategies of play in order to learn. However, if players were to experiment beyond their first modest level of success, they would need some standard against which to judge their performance. The expectation of a maximizing strategy was introduced to increase the amount of experimentation with different lines of play and ultimately improve performance in the game.

Out of these two design features, a two-by-two table of experimental conditions was created:

TABLE I

	Absence of record sheets of previous games	Presence of record sheets of previous games
No knowledge of maximum possible catch	EXPERIMENTAL CONDITION I	EXPERIMENTAL CONDITION III
Knowledge of maximum possible catch	EXPERIMENTAL CONDITION II	EXPERIMENTAL CONDITION IV

The "knowledge of maximum possible catch" condition was handled by having the teacher introduce this bit of information at the beginning of play and remind the class of it periodically. The teachers were even encouraged to chide the students about being poor hunters if they could not catch the maximum every time. Classes in the "no knowledge" condition simply were not told how many it was possible to catch every time.

The presence or absence of record sheets was a bit more difficult to engineer, as the game is played on what becomes the record sheet, and obviously students cannot have this information hidden from them. However, pilot tests of the game indicated that fifth graders never spontaneously discussed past record sheets before beginning another game. If left to themselves, they went immediately to the next game. Therefore, if the teachers in the "absence" condition merely did not encourage discussion of the record sheets and required that each sheet be turned in before a new game could be started, it effectively created an "absence" condition. The "presence" condition was created by having the teacher encourage discussion of the past record sheets and comparisons between games played, even stopping class occasionally to force the children to discuss how to do better. Of course, the teacher was strictly forbidden from telling the students how to play more effectively.

The teachers were asked to take whatever time was necessary to have each group play the Bow and Arrow Hunting Game four times and the Crossing Place Hunting Game six times. By standardizing the number of plays, the Condition IV groups would probably spend more actual time on the games. It was thought that the critical factor was the number of times the game was played, not the absolute amount of time spent on the games.

Since the experimental conditions depended on the teacher's role in the class, a classroom had to be the unit used in assigning students to experimental conditions. Consequently, the twenty-three classrooms were assigned randomly to the four experimental conditions. In doing this, no distinction was made between fifth and sixth graders, between the ability-grouped or non-graded classes and the rest of the classes, between the ability or experience of the teachers, or between the different socio-economic levels of the areas from which the schools drew their students.

Explanatory Data

In the literature on games, it is quite common to use sex and ability (as measured by grades in school or I.Q.) as explanatory variables in the analysis of the differential impact of a game. There is evidence that sex and ability are important factors in some games. Furthermore, there is evidence that the make-up of the group one plays a game with makes a great difference in how well one plays and what one learns.

The variables of sex and teacher ability ratings were used to assign a group of students to a game board, rather than as post-experiment explanatory variables. After the classrooms were randomly assigned to experimental conditions, the ratings of the teachers of the six classrooms involved in one experimental condition were used to create nine types of three-person groups: bright boys, bright mixed-sex, bright girls; average boys, average mixed-sex, average girls; slow boys, slow mixed-sex, slow girls.

The teachers were given lists with the names of the three students in their classes to put at each gameboard. They were instructed to have this group of three students play together for the entire sequence of the games. This helped insure that a single group did not stay together for the entire sequence.

The Clinical Data

A regular series of observations and interviews were conducted with students in the classes used in this study. An observation schedule was developed, and each observer was assigned two groups. The number they could observe was limited by the length of time it took for a single group to complete the entire sequence with the games, and by the fact that several teachers were simultaneously using the games.

An interview schedule was likewise developed, and the individuals were asked to interview the same students that they had observed. In addition, a separate interview schedule was developed for the teachers, and other members of the staff interviewed the teachers after they had completed the game sequence.

The Sequence of Play

The use of the games involved the following steps, in sequence: (1) the administering of the Bow and Arrow pre-test; (2) showing a filmstrip which explained the rules of the Bow and Arrow Game, with the teacher reading the accompanying explanation for each frame and attempting to determine whether the students understood the rules (this filmstrip has since been abandoned as not helpful); (3) the playing of the Bow and Arrow Game in the assigned groups for four plays, with rotation of roles after every play; (4) the administering of the Bow and Arrow post-test; (5) discussion of the game; (6) the showing of the films of crossing place hunting in Pelly Bay; (7) an explanation of the strategy of the crossing place hunt, using a diagram on the wall; (8) the administering of the Crossing Place pre-test; (9) the showing of the remainder of the filmstrip, which explained the additional rules for the Crossing Place Hunting Game, with the teacher attempting to determine if they were understood; (10) the playing of the Crossing Place Game for six plays in the assigned groups, with rotation of roles after each play; (11) the administering of the Crossing Place post-test. In addition, depending on the experimental condition, different activities were to take place between the games -- the teacher reminding the students that they could catch eight caribou every try if they were good hunters, or the teacher encouraging the students to plan, to try to overcome the mistakes of their previous games. For each game, the students were to fill out a block at the top of the game sheet, giving the date, the number of the game, the names of the players playing each role, the number of caribou caught by each player, and the teacher's name.

A major shortcoming of the research design is the fact that the creation of the experimental conditions depended on the teacher's role in the classroom. There would be differences in the amount of effort each teacher put into the creation of the experimental condition. The teachers also knew what all of the experimental conditions were and how the experiment should conclude, and they might have influenced the performance of the students.

The Clinical Findings

As was described earlier, an observation schedule was constructed, and four observers watched the groups play the games. An interview schedule was made for both students and teachers. Plans were developed for interviewing a sample of students. The interview data from the children, however, were not obtained. Shortly after the death of Martin Luther King, Jr., EDC was charged with developing in an extremely short period of time a series of television shows on race prejudice to be shown nation-wide. This project absorbed all of the energies of the regular staff and left no time for the regularly scheduled interviews. The teacher interviews were conducted, though in many cases much longer after the playing of the games than was originally intended. The year reported in this chapter, therefore, are based on the observations of ten groups of children and interviews with all of the teachers.

The Observation Data

All of the observers except one reported high enthusiasm for the games among the children. In the class where enthusiasm was not apparent, the teacher did not like the particular game (Bow and Arrow Hunting), did not understand its purpose, and did not know the rules well. The teacher openly admitted that this was the case.

It was apparent on close observation that a great many of the rules of the games were not comprehended: students either forgot them or misused them. There was almost no evidence of deliberate violation of rules. The only cheating observed was one caribou player who would occasionally roll the dice a second time if he did not like the direction indicated on the first roll. In spite of the number of confusions on the rules, the children were generally not bothered. They were often unaware that they were violating a rule, but this ignorance did not make the game unplayable. They quickly developed a rule for handling each situation which was a problem.

Though there were wide variations among the classes, the filmstrip generally did not work effectively as a way of teaching the rules. There was much lack of attention to the filmstrip. The students wanted to get on with the game.

The observers noted considerable argument and discussion among the players as to how best to play the games. Clearly, the students could engage in the task of trying to play the game better. The only time this did not happen was when personality clashes prevented cooperative discussion and planning.

There was, at least in some classes, a considerable amount of affective identification with the Eskimo role. Name calling was common if a Beater let the herd get away. Frequent references were made to "starving" if some caribou were not caught on the next game. In some classes, some students virtually refused to play the position of moving the caribou herd, and at least once it was observed that all three players would plan the Beater and hunter strategy even though one was moving the herd.

Using game sheets from one play to plan for the next was difficult for the children. Even when the teacher practically forced the students to plan, some refused. However, it was equally true that many students did attempt to learn from the best games of other groups and from their own best games. Even the slowest students seemed able to discuss what happened in the game in causative terms.

The Teacher Interviews

Almost without exception, the interviews of the teachers confirmed and generalized the findings from the direct observations, even though the observations had been made on a very small sample of students. In particular, the teachers repeatedly cited the length and complexity of the filmstrip and the difficulties in understanding some of the rules. Many of the teachers were willing to admit that most students learned the rules through the filmstrip, but most felt it turned the students off so thoroughly that it should not be used, particularly with slow students.

Most teachers introduced the game by telling the students that they were part of an experiment. This was generally met with enthusiasm by the students, and they were willing to put up with playing with classmates they did not like and taking pre- and post-tests, because they felt they were part of an experiment. It is unclear how much this would bias results. However, it seemed a sufficiently powerful mechanism that perhaps teachers should say that the students are part of an experiment even if they are not.

Most of the teachers created a role-playing mood for the game, and this seemed to help immensely. Either they told students that they were "to see how good a hunter" they were, or they encouraged the students "to try to catch enough caribou" for their "families." In all cases except one, there seemed to be very high affective identification -- usually with the hunters and their plight, though occasionally with the caribou. Even weeks later, some teachers reported students bringing up the problems of the hunters or Beaters as analogies in totally different contexts.

Discussions were common outside of class, particularly among the boys, and numerous groups came in to school early to play additional games. Only one class reported very little discussion or concern for the game. In the vast majority of cases, interest was maintained at a high level for the entire sequence. Boredom set in only if the games had been mastered early by some group, or if there was a severe personality clash at a gameboard, or if the group was consistently unsuccessful in catching any caribou. There was a fairly high incidence of role preference -- aggressive boys preferring the hunter role, passive girls preferring the caribou-moving role. This role preference was responsible for lack of interest during the play of the game in which a person was not playing his preferred role.

There was very wide agreement that Crossing Place Hunting was a much more exciting and involving game than Bow and Arrow Hunting. Two of the teachers said they would not use Bow and Arrow Hunting again. Only with the slow students was there any feeling that the Bow and Arrow Hunting Game was valuable. For them, it taught many of the rules which were needed in Crossing Place Hunting and thus was valuable. Generally, the students regarded the Bow and Arrow Game as merely a matter of luck (which is pretty nearly true) and lost interest quickly.

Quite generally, the teachers recommended mixed sexes and mixed abilities. Only one teacher preferred single sex groups and single ability groups. In particular, the teachers cautioned against three slow students together. Rather than being able to work at their own pace, they were unable to make any progress at mastering the game, rapidly became frustrated, and caused behavior problems. They needed someone brighter at the gameboard to help them do better.

The teachers quite widely reported that the games were played best by the brighter students and worst by the slowest. Two teachers, however, qualified this. They felt that the major factor in whether the games worked was the personalities of the students. The more aggressive students, regardless of ability, seemed to do better. There could clearly be too much aggression at one gameboard, though, and if the students became too interested in putting each other down, they could not play well. They could not cooperate, and without some willingness to give and take, the games did not work.

The post-game discussions were reported as noticeably better. Every teacher reported that detailed and accurate knowledge of the different roles and the different tools was apparent after the games. Lots of questions were asked by students about relationships between the games and the other parts of the curriculum, particularly comparisons to the films of actual hunts. Many comments were made by students to the effect that some aspect of the games was not accurate. The importance of cooperation and planning seemed to be brought home. Several teachers reported that references to the games kept appearing in class discussions weeks later.

Teachers generally reported few problems, except that the classroom became very noisy, and that there was a great deal of equipment to be distributed. With a large class in a crowded room, the distribution of equipment and the answering of questions became a very difficult task for one teacher to handle.

In general, the games were regarded as highly successful, a very valuable addition to the course. The anecdotal reports were highly similar to those from other research studies on other games. For the designers, the clinical data pin-pointed many additional but minor difficulties in the games. The teachers were extremely helpful in suggesting ways of avoiding the difficulties in the future. The intuitive feelings of the teachers about what happened -- both what the students learned and which students did best -- provide a convenient standard against which to compare the experimental findings.

The Game Sheet Data:

The game sheets from the Crossing Place Game, which numbered over 600, were scored for overall quality of play and ranged from two (very bad) to ten (very good). The rater reliability for the scoring of the game sheets without the third rater was r = +.712. With the third rater scoring just the cases of major disagreement and using the middle score of the three, the rater reliability jumped to r = +.974.

The Pre- and Post-Test Scores

There were seven categories of questions: factual, telling directions, analogies, structure of the game, strategies, perceptions of the game, and attitudes toward the game. For the two types of questions asked on a pre-test--post-test basis (factual and telling directions), a gain score of post-test minus pre-test was used. For each of the other types of questions asked only on the post-tests, a score of the number right minus a corrections factor for random guessing was used. The result was seventeen scores for each individual, of which we will explore only 10 -- those associated with the Crossing Place Game.

GAIN IN FACTS: Gain score on the factual questions on the Crossing Place Game. There were eight questions given both on the pre-test and on the post-test. The gain score was determined by subtracting the pre-test score from the post-test score.

GAIN IN ANALOGIES: Gain score on the questions about analogies between the rules of the game and the actual situation. There were two questions given on the Crossing Place Game post-test. The gain score was determined by subtracting from the post-test a score which would be expected from purely random guessing.

GAIN IN STRUCTURE: Gain score on the questions about the structure of the underlying model of the game. There were ten such questions given on the Crossing Place Game post-test. The gain score was determined by subtracting from the post-test score a score which would be expected from purely random guessing.

GAIN IN STRATEGIES: Gain score on the most effective strategies in the game. There were nine such questions given only on the Crossing Place Game post-test. The gain score was determined by subtracting from the post-test score a score which would be expected from purely random guessing.

IMAGINE REAL HUNT: One question on whether the students felt that playing the game had helped them imagine what it would be like to actually hunt caribou. Scores ranged from 1 (strongly agree) to 5 (strongly disagree).

WANT TO PLAY LOTS MORE: One question asking students if they would like to play the game a lot more times. Scores ranged from 1 (strongly agree) to 5 (strongly disagree).

THINK LEARNED SOMETHING: One question asking students if they thought they had learned something. Scores ranged from 1 (strongly thought they did) to 5 (strongly thought they did not).

PREFER HUNTER ROLE: One question asking students if they preferred playing the hunter to moving the caribou herd. Scores ranged from 1 (strongly preferred playing hunter) to 5 (strongly disliked playing the hunter).

PREFER GAME TO REST OF CURRICULUM: One question asking students if they preferred playing the game to anything else they had done or been exposed to in the rest of the curriculum. Scores ranged from 1 (strongly preferred game) to 5 (strongly preferred other parts of the curriculum).

TABLE 2

TESTS ON EACH TYPE OF QUESTION

	Mean Percentage Increase		N	T-TEST	SIGNIFICANCE
GAIN IN FACTS	10.8		331	8.809	p < .000
GAIN IN ANALOGIES	61.8*		330	46.108	p < .000
GAIN STRUCTURE	15.3*		327	13.204	p < .000
GAIN PERCEPTION	17.4*		360	13.214	p < .000
GAIN STRATEGIES	10.8*		359	13.711	p < .000
GAIN IMAGINE REAL HUNT	0.906*	1.222**	352	13.917	p < .000
GAIN WANT TO PLAY LOTS MORE	1.020*	1.343**	354	14.285	p < .000
GAIN THINK LEARNED SOMETHING	1.230*	1.112**	352	20.746	p << .000
GAIN PREFER HUNTER ROLE	0.224*	1.467**	353	2.867	p < .004
GAIN PREFER GAME TO REST CURR.	0.554*	1.367**	354	7.622	p < .000

*Post Test Score Versus Random Expectation
**Based on Shift from Center of Rating Scale, Ranging from 1-5

At one point, an attempt was made to give the post-tests to a group of students who had not played the games, merely as a way of seeing how many of the questions gave away the right answer, or at least permitting narrowing down the range of responses. Both the students and the teachers rebelled, however. It seemed to them ridiculous to try to answer questions that they could not be expected to know anything about. Explanations about the research value of such zero order information were unconvincing.

As can be seen in the preceeding table all of the tests on the categories are very highly significant. Only the preference for the role of hunter is only mildly significant.

Most of the students had highly favorable attitudes toward the game; a number of them learned additional factual information about the relationships between man and animals in the caribou hunt, even though this information had been presented in a variety of ways in earlier portions of the course; most students could recognize the analogies between the games they were playing and the actual task of catching caribou; in the context of the games, most of them understood the relationships between variables well enough to be able to predict the effects on the entire game of a change in one; they were able to perceive the differences in the effectiveness of the two forms of hunting; and within the game they were sufficiently aware of the strategies they used to be able to recognize verbal statements of them, even when they strategy they used was not the best.

The Quality of Play of the Game:

One of the clearest hypotheses with respect to simulation games is that over a series of plays, by utilizing the feedback from each play, the players should get better at playing the game. Table 3 illustrates graphically the findings of the total sample. Game 7 is somewhat aberrant, as only thirty students played a seventh game. For the first six plays, there was a steady increase in quality of play. The graph illustrates a mean increase in the ratings of Inukshuk position and Beater coordination from about 2.25 to 3.00 on a five point scale (i.e., divide the quality rating on the vertical axis by four). As was indicated by the questions on strategies, most students did not reach mastery of the game. Such mastery would have been indicated by scores between 16 and 20. The standard deviation is also quite large, larger in all cases than the total increase in quality over the six plays. It is unclear whether additional plays of the game would have resulted in an additional increase in the quality of performance or a decrease in the standard deviation or both.

The Relationship Between Game Performance and Test Performance

If students appear to have learned from the game, and if they appear to have improved in their ability to play the game, is there any relationship between the two?

For the analogy questions, there is a relationship among the variables in the direction of high quality play being associated with a large analogy score, a low quality of play being associated with a loss (less than random expectation) in knowledge of analogies. Similarly, there is an extremely high relationship between average game quality and knowledge of strategies.

TABLE 4

MEAN QUALITY OF PLAY BY TEST PERFORMANCE: CROSSING PLACE GAME

Type of Question	Chi-Square Value	DF	Significance
GAIN IN FACTS	2.854	4	N.S.
GAIN IN ANALOGIES	9.876	2	.007
GAIN IN STRUCTURE	10.886	4	.028
GAIN IN PERCEPTION	0.836	4	N.S.
GAIN IN STRATEGIES	46.710	4	.000

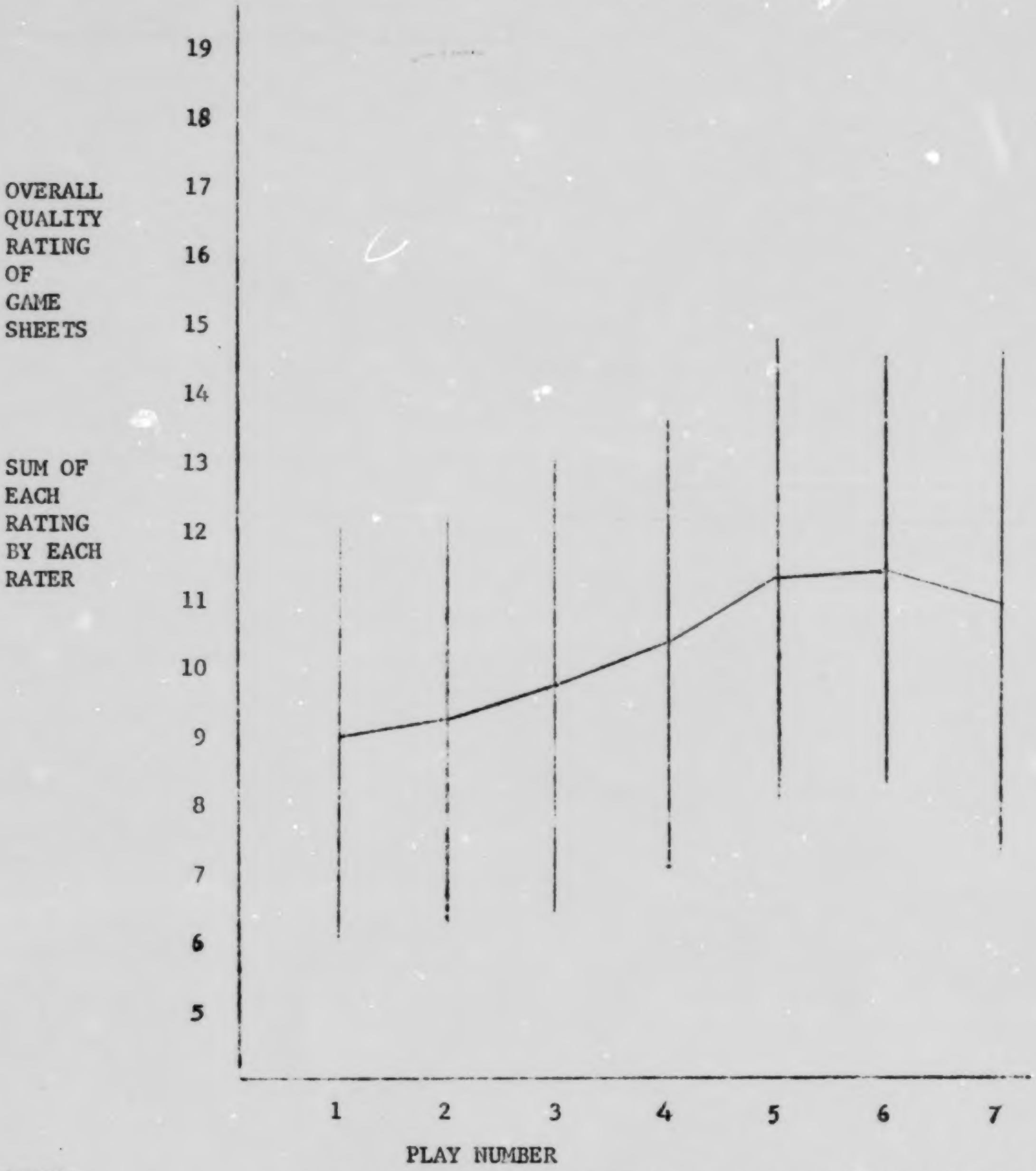
On the other hand, the gain in factual knowledge or the accuracy of perceptions about the games is not significantly related to the overall quality of play. Since high scores on these types of questions were prevalent, it appears that such learning is independent of how well one plays the game and depends merely on having played it.

It would seem likely that the quality of play would be related to the attitudes toward the game, that those who do well would like the game and think they were learning something; those who did not do well would have unfavorable attitudes. Generation of a similar set of cross-tabulations between quality of play and attitude scores produced the

TABLE 3

OVERALL QUALITY OF PLAY

MEAN AND STANDARD DEVIATION FOR EACH PLAY OF THE CROSSING PLACE GAME



	1	2	3	4	5	6	7
MEAN	9.169	9.769	10.294	10.926	12.031	12.196	11.700
STANDARD DEVIATION	3.107	3.445	3.641	3.700	3.830	3.650	4.145
N	373	373	364	340	318	230	30

figures in Table 5.

TABLE 5

MEAN QUALITY OF PLAY BY ATTITUDES

Question	Chi-Square Value	DF	Significance Level
1. IMAGINE REAL HUNT	3.843	4	N.S.
2. WANT TO PLAY LOTS MORE	11.885	4	0.018
3. THINK LEARNED SOMETHING	5.380	4	0.251
4. PREFER HUNTER ROLE	7.261	4	0.123
5. PREFER GAME TO REST CURR.	5.000	4	0.288

As the table indicates, the only significant relationship was with the desire to continue playing. Students thought they learned something regardless of the quality of their play. The preference for the hunter role and the preference for the games over the rest of the curriculum were not significant.

We have seen that: on each type of knowledge measured by the pre and post-tests, the students did well; on the actual play of the game, they gradually improved; their attitudes toward the games were almost uniformly favorable; and there seem to be some significant relationships between the quality of play and the knowledge learned, particularly with respect to strategy knowledge.

Test Performance Across Experimental Conditions.

The major hypotheses of this research study involved the four experimental conditions: experimental condition I, in which the students merely played the games; experimental condition II, in which the information about the maximum number of caribou which could be caught was introduced; experimental condition III, in which students were encouraged to study the record sheets of past games and plan for future ones, but in which they did not know that there was a maximum possible catch; and experimental condition IV, in which students both knew what it was maximally possible to catch and were encouraged to study the past record sheets and plan.

The hypotheses were that experimental condition IV would outperform experimental condition I, and that II and III would fall in between and probably in numerical order with respect to performance. What, then, are the effects of planning as opposed to not planning on game performance and learning, and what are the effects of knowing what constitutes mastery of the game?

Table 6 presents the mean and standard deviation for each of the combinations of factual questions for each experimental condition. The F-tests show a significant difference between the experimental conditions for the gain in factual knowledge from the Crossing Place Game, and this is strong enough to make the combined factual knowledge gain score significant between experimental conditions. Inspection reveals that the highest gain score by far was in experimental condition IV. Experimental conditions I, II, and III are roughly equal. It would appear that the combination of encouragement to plan and the knowledge that there was a maximum possible catch aided in learning the factual knowledge embodied in the rules of the game, but that neither planning nor knowledge of the maximum worked independently.

TABLE 6

F-TESTS BETWEEN EXPERIMENTAL CONDITIONS

FACTUAL QUESTIONS

GAIN FACTS CROSSING PLACE GAME	Experimental Conditions					
	I	II	III	IV	F-Test	Significance
MEAN	0.803	0.485	0.863	1.451	4.146	p = .007
STD. DEV.	0.683	1.820	1.627	1.918		
N	88	99	73	71		

Table 7 gives the mean, standard deviation, and F-test scores across experimental conditions for the analogy questions. The differences are highly significant, even though on the Crossing Place Game there were only two questions.

The scores highly favor experimental conditions III and IV over experimental conditions I and II. Encouraging the students to study their past games and plan for the coming ones appears to have had a significant impact on their awareness of the analogies between the games and the actual situation.

TABLE 7

F-TESTS BETWEEN EXPERIMENTAL CONDITIONS

ANALOGY QUESTIONS

	Experimental Conditions					
GAIN ANALOGIES	I	II	III	IV	F-Test	Significance
MEAN	1.121	1.197	1.336	1.331	3.852	p = .010
STD. DEV.	0.575	0.524	0.373	0.337		
N	87	99	73	71		

Table 8 presents a similar breakdown of the questions on the knowledge of the structure of the games. Again, the differences are all significant and favoring experimental conditions III and IV over I and II.

TABLE 8

F-TESTS BETWEEN EXPERIMENTAL CONDITIONS

STRUCTURE QUESTIONS

	Experimental Conditions					
GAIN STRUCTURE	I	II	III	IV	F-Test	Significance
MEAN	1.161	1.182	2.027	1.971	4.318	p = .005
STD. DEV.	2.266	2.251	1.748	1.795		
N	87	99	73	68		

Again, it would appear that knowledge of the underlying structure of the game is greatly enhanced by encouraging the students to think about their past games and plan for the future ones, and that the learning is much less if students are asked merely to play the games.

Table 9 presents the breakdown of the scores on perceptions of the games.

TABLE 9

F-TESTS BETWEEN EXPERIMENTAL CONDITIONS

QUESTIONS ON PERCEPTIONS OF THE GAME

	Experimental Conditions					
GAIN IN PERCEPTION	I	II	III	IV	F-Test	Significance
MEAN	2.073	2.082	2.240	2.165	1.215	P = .304
STD. DEV.	0.637	0.679	0.714	0.587		
N	96	110	75	79		

The differences here are not significant. What differences do exist, however, again tend to favor experimental conditions III and IV.

Table 10 gives the strategy question scores.

TABLE 10

F-TESTS BETWEEN EXPERIMENTAL CONDITIONS

STRATEGY QUESTIONS

	Experimental Conditions					
GAIN IN STRATEGY	I	II	III	IV	F-Test	Significance
MEAN	1.667	1.973	2.453	2.127	12.631	P < .000
STD. DEV.	0.842	0.862	0.759	0.911		
N	96	110	75	79		

Here again, the differences are highly significant, with experimental conditions III and IV out-performing experimental conditions I and II. In this case, experimental condition III is the highest.

One important conclusion from the above data seems to be that teachers not only can, but should, play a vital role in making games work effectively as instructional devices. If the teacher plays a role of encouraging the students to plan, to try to make effective use of the information which the games provide, this brings about a substantial increase in the knowledge gained. The teachers were right in their intuitive feelings, expressed during the interviews, that the students in experimental conditions I and II were missing things that they could have gotten if the teacher intervened to help.

In terms of the two experimental variables, encouragement to plan and study past games seems by far the more valuable. Knowledge of the maximum possible score which constitutes mastery of the game has a marginal effect over nothing at all; experimental condition II was usually superior to experimental condition I. This effect of knowledge of the maximum, however, generally disappeared when combined with planning and study. Experimental condition IV was not consistently above experimental condition III. One possible explanation for this is that with very careful study it is possible to determine from the actual game sheets what the maximum possible catch is. It is not known how many students in experimental condition III actually figured this out. In any case, if the knowledge made any difference, it certainly would have had greater impact in condition IV with the authority of the teacher behind it.

Quality of Play Across Experimental Conditions:

Do the differences between experimental conditions hold for the quality of the actual play of the game? The F-tests are significant for each play of the game, as well as for the average quality of play. Experimental conditions I and II cluster together, and experimental conditions III and IV cluster together. However, the differences between experimental conditions were there in Game 1, and the rate of improvement over time was roughly equal for all four experimental conditions.

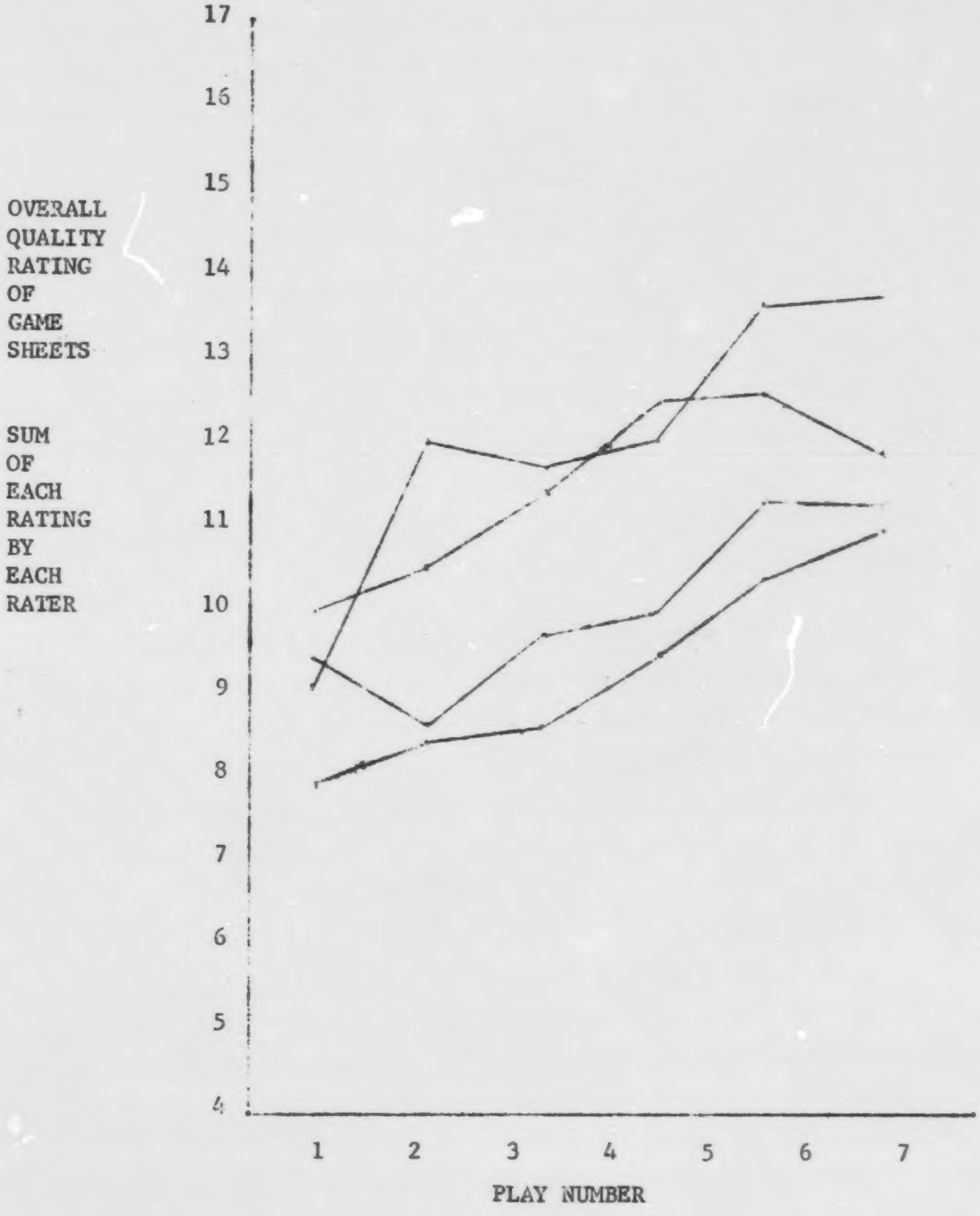
It is difficult to interpret this finding. Essentially, the game seems to provide adequate feedback for improving play from one game to the next, regardless of the experimental condition. If these findings are combined with the test performance data, it appears as though the experimental conditions had much more impact on what the students

TABLE 11

OVERALL QUALITY OF PLAY BY EXPERIMENTAL CONDITION

GRAPH OF MEAN SCORES FOR EACH PLAY OF THE GAME

TYPES A, B, AND G DATA POOLED



learned from their play than they did on the quality of their actual play.

The Differential Effects of Ability:

It has often been claimed that games are effective with different students from those who do well in conventional classroom tasks. The teachers were asked for this experiment to rate the ability of the students in terms of performance in school. Using the three levels of ability, it was possible to generate a set of cross-tabulations of ability level by knowledge gained. The results are in Table 12.

TABLE 12

CHI-SQUARE VALUES AND SIGNIFICANCE

ABILITY LEVEL BY KNOWLEDGE GAINED

Question	Chi-Square Value	DF	Level of Significance
GAIN FACTS	11.137	4	0.025
GAIN ANALOGIES	15.474	2	0.000
GAIN STRUCTURE	16.472	4	0.003
GAIN STRATEGIES	2.291	4	N.S.
GAIN PERCEPTION	23.468	4	0.000

All of the significant relationships are in the direction of bright students having the largest gains, slow students the smallest. Virtually all of the test scores are highly related to ability, and in all cases the direction is one of bright students learning the most, slow students learning the least. In terms of the learning measured by the tests, the games did not overcome the effects of ability.

The relationship of most interest in the table is one which was not significant; the strategy knowledge by ability cross-tabulation. Strategy questions are the most independent of ability. Since the strategy questions were the ones most related to quality of play, this seems to suggest that there should be no significant differences between ability levels in terms of actual performance in the games.

Table 13 presents the results of a series of cross-tabulations of ability by quality of play.

TABLE 13

CHI-SQUARE VALUES AND SIGNIFICANCE

ABILITY LEVEL BY QUALITY OF PLAY

Game No.	Chi-Square Value	DF	Level of Significance
1	5.863	4	0.210
2	2.223	4	N.S.
3	3.259	4	N.S.
4	1.480	4	N.S.
5	3.086	4	N.S.
6	3.947	4	N.S.
Mean	2.175	4	N.S.

These results are rather striking. The one thing which the games could teach independent of ability was how to play the games. And this knowledge of how to play carried over so that it could be measured in pencil and paper tests independent of the games. If this finding is at all generalizable to other simulation games, it appears that the thing a game teaches best to all students, regardless of ability, is how to play the game. Other kinds of learning which involve reflecting on or making inferences from experiences in the games are not independent of ability.

Table 14 presents the results of the cross-tabulations of ability by attitudes toward the game.

TABLE 14

CHI-SQUARE VALUES AND SIGNIFICANCE

ATTITUDE QUESTIONS BY ABILITY LEVEL

Question	Chi-Square Value	DF	Significance
1. IMAGINE REAL HUNT	4.575	4	0.334
2. WANT TO PLAY LOTS MORE	0.719	4	N.S.
3. THINK LEARNED SOMETHING	11.772	4	0.019
4. PREFER HUNTER ROLE	5.898	4	0.207
5. PREFER GAME TO REST CURR.	3.780	4	N.S.

The only significant relationship is with attitudes toward learning in the games. The slower students were less convinced that the games had been a learning experience; the bright students definitely thought it was. These findings confirm the previous findings. With respect to learning, the slower students thought they had learned less, and they were right.

The Differential Effects of Sex:

The literature on games has often used sex as an explanatory variable; but there have rarely been significant differences between sexes. Table 15 presents the chi-square values for cross-tabulations between sex and knowledge gained.

TABLE 15

CHI-SQUARE VALUES AND SIGNIFICANCE

SEX BY KNOWLEDGE GAINED

Type of Question	Chi-Square Value	DF	Significance
GAIN FACTS	0.607	2	0.162
GAIN ANALOGIES	0.268	1	N.S.
GAIN STRUCTURE	4.608	2	0.100
GAIN PERCEPTION	3.165	2	0.206
GAIN STRATEGIES	16.842	2	0.000

For the most part, the relationships are non-significant. However, there is one highly significant relationship -- Strategies -- on which girls do much more poorly than boys. Again, this is the one set of questions which is most dependent on quality of play. The other questions are largely independent of the quality of play and depend on learning from the entire experience. Strategy scores depend on doing well in the games.

The sex quality of play chi-square values are presented in Table 16. On every single play of the Crossing Place Game, the boys did significantly better than the girls. These findings were confirmed. in the attitude questions, the chi-square values for which are reproduced in Table 17.

TABLE 16

CHI-SQUARE VALUES AND SIGNIFICANCE

SEX BY QUALITY OF PLAY

Game Number	Chi-Square Value	DF	Significance
1	20.488	2	0.000
2	50.873	2	0.000
3	18.225	2	0.000
4	26.877	2	0.000
5	10.113	2	0.006
6	17.201	2	0.000
Mean	30.586	2	0.000

TABLE 17

CHI-SQUARE VALUES AND SIGNIFICANCE

ATTITUDES BY SEX

Questions	Chi-Square Value	DF	Significance
1. IMAGINE REAL HUNT	3.572	2	0.168
2. WANT TO LEARN LOTS MORE	16.999	2	0.000
3. THINK LEARNED SOMETHING	0.732	2	N.S.
4. PREFER HUNTER ROLE	10.058	2	0.007
5. PREFER GAME TO REST CURR.	6.960	2	0.031

There is no significant difference between sexes in thinking they learned, and this is correct. In the learning which was not a function of performance in the game, there was no difference between the sexes. However, on the attitude questions having to do directly with playing the games, significantly more boys want to keep playing the game, prefer playing hunter, and prefer the game to the rest of the curriculum.

The conclusions from this are quite clear. Learning from games, which is dependent on performance in the games, is independent of ability and highly associated with sex, males doing better than females. Learning from games, which is independent of performance in the games and dependent instead on making inferences from, or relating knowledge to, the game experiences, is independent of sex and highly associated with ability, the brighter students learning much more.

From some additional analyses, it appears that the ability level of the group with which one plays makes very little difference. Performance in the game is largely independent of ability, performance on the tests is strongly related to ability, and the particular groupings do not seem to be able to affect this measurably. Performance in the game is highly dependent on sex, performance on the tests is largely independent of sex, and the particular groupings do not seem to be able to affect this measurably.

In conclusion, these data clearly suggest that the games were highly successful as teaching devices. The test questions measured a variety of kinds of knowledge which were related to the game experience, and on all of these kinds of knowledge questions, the students did well. Over a series of plays, the students improved at playing the caribou games. Attitudes toward the game experience were uniformly very favorable.

The data clearly indicate that studying past games and planning for future ones improved the learning of most of the kinds of knowledge. Stated in a slightly different way, it appears that students must reflect on their play in order to learn much from it; simply playing the game is not nearly as good in bringing about learning from the game.

The visual record sheet of past games appears to have worked effectively. It worked by itself in terms of improving the quality of play. Students in each of the experimental conditions improved at roughly the same rate. However, it was necessary for the teachers to encourage the students to study the past games and plan for future ones in order to bring about learning other than that related to the quality of play. When the teachers did encourage study and planning, it improved learning.

Knowledge of the maximum possible catch of caribou (or in more general terms, knowledge of what constitutes mastery of the game) does not seem to have improved performance in any important way. Rather than improving performance, it possibly increased the frustration of the students who did not know how to go about improving.

In terms of performance in the game, none of the groups of students in the experimental conditions approached mastery of the game. Since strategy knowledge is closely related to quality of play, if the objective were to have the students understand the strategies used by the Netsilik, they should play the game more times than the four to six time used in this study. However, it is unclear whether additional plays would bring about an increase in the other kinds of knowledge associated with the game playing. A study in which variation in the number of plays was an experimental variable would be necessary to consider this. This study has only revealed that for knowledge other than strategy knowledge, learning is for the most part independent of quality of play.

At least in these games, sex is significantly associated with the quality of play, and with that kind of learning dependent on quality of play. Boys greatly out-performed girls in actual game performance. Boys were far superior in knowledge of the most effective strategies in the game.

For these games, ability is significantly associated with the other kinds of knowledge gained from the games. The games were not able to overcome the differences in ability for any kind of learning, other than that associated with playing the games well. This would appear to indicate that what games teach best is how to play the games. But a variety of other kinds of knowledge can be learned from game experiences, and bright students manage to get more out of games than slow ones. This seems quite similar to other teaching techniques from which the brighter students get more than the slower ones.

The finding that group effects are negligible if controlled for ability and sex is difficult to interpret. It is possibly due to the extremely small size of the groups and to the sharing of the various roles. By such sharing, any differentiation in the groups is broken down, and the sex and ability differences become the predominant influences. However, this cannot be known for certain. This finding does suggest that teachers may group the students at their convenience.

SECTION V

IN THE CLASSROOM: OBSERVATION FINDINGS

IN THE CLASSROOM: OBSERVATION FINDINGS

I. Purpose and Methods

In 1967, widescale dissemination of MAN: A COURSE OF STUDY began, and in response, the evaluation team created additional instruments to assess the undertaking. One of these was a Classroom Observation Form, which allowed different observers to view different classes and still produce relatively comparable data. The Observation Form was designed so that we could make abstractions about highly idiosyncratic class sessions.

The development of the classroom-centered aspect of the evaluation stemmed from needs of the curriculum developers to understand the way in which MACOS is used in the schools and the conviction that the teacher is a crucial determinant of the success of any classroom endeavor. While the MACOS pedagogy emphasizes a student-centered approach, it is the teacher's reponsibility to facilitate learning. Since MACOS also relies heavily on interaction between the various members of the class, the role of "orchestrator" is amplified. The MACOS classroom, with its multitude of activities and its materials which cannot themselves "teach" the course, is a complex and different place from the room in which each student works independently with a programmed curriculum. It is different, too, from the traditional classroom, in which students read a text and then answer the teacher's questions.

We wanted, then, to learn more about the interaction of curriculum, students, and teacher. MACOS was designed to encourage new roles for teacher and students and new ways of learning, and we wanted to know from first-hand observation the extent to which the course did promote these innovations. Would teachers simply teach a new content in a traditional way? Could we discern a change in classroom atmosphere over time? How would the MACOS classroom compare to the one using a conventional social studies curriculum? Could we make judgments about the success of specific topics of the course? Finally, we hoped to gain insight into the teaching process, to go beyond our concerns about MACOS to a more general understanding of teaching styles.

We began classroom observation on a limited basis as we attempted to understand the nature of systematic study of medium to large ongoing, real-world groups. Observers visited the same class approximately eight times (two successive days each month) and became familiar with the teacher and the students in that class. Rarely were our tabulations based on a single visit. This schedule of announced visits proved useful and has been continued.

Description of the observation instruments and samples of the 1968 and 1969 forms and the "Notes on the Use of the Observation Form" may be found in the **appendices.**

Our evaluation of a lesson has two foci: (1) the content itself -- the structure and characteristics of the lesson, and its success as the observer perceives it; and (2) the classroom atmosphere, with emphasis on the teacher's style. The former includes such dimensions as the objectives of the lesson and the kinds of activities which occur; the latter includes such dimensions as the teacher's stance and the teacher's role (e.g., authority/guide/resource/non-participant).

Moreover, our observations have always been global in nature: we have tried to describe and assess the dynamic, complex organism which is the classroom, rather than to limit our attention to a single sector of it. For this reason, our data are thoughtful impressions, rather than precise measures. We would estimate the number of student-to-student exchanges, for example -- not count them. Similarly, we would make rough judgments about such uncountable dimensions as the teacher's classroom personality. Also, the form is open-ended: we want the observer to describe with examples what happens in class, and we find his insights important.

To implement this approach, we have used several strategies. The judgmental quality of the form requires that our observers be trained and sensitive to the realities of the classroom. Most observers have been teachers themselves. Others have considerable experience in education. As the observation staff increased in size, we began a training program. Notes explaining the dimensions of the 1968 form were prepared, and then repeated joint observations were conducted, followed by discussion of ratings. We feel that these procedures create consensus and thus lessen the problem of individual bias.

A different approach to classroom observation -- precise measurement of certain aspects of the class session (such as Flanders' Interaction Analysis[1]) -- has a number of advantages, the most important of which is reliability. Also, it requires training in the use of technique but not sensitivity to the education process on the part of the observer. Given the complexity of the classroom, it seems attractive to be able to "tune out" all but a few pre-determined dimensions. It is just for this reason, though, that we did not opt for this type of precision: the classroom is exceedingly complex, and too much is lost in oversimplification. We did not want to decide *a priori* on the crucial aspects of classroom behavior. We preferred to collect data on a wide variety of items and to determine their significance on the basis of the data.

Another factor influenced our choice of observation methods. Out of respect to the schools and teachers on whom we were imposing, we rejected any observation system which involved more than one person visiting a class. We knew that the typical teacher would rather not be observed, no matter how non-threatening we tried to be. A teacher could be more relaxed with a single familiar observer and, therefore, exhibit more typical behaviors. We aimed at minimum interference in the life of the classroom.

We designed our study to determine:

1. The typical ways the curriculum was used in the classroom (e.g., frequency of different types of activities)
2. The major teaching styles and classroom atmospheres (e.g., types of roles teachers assume)
3. Whether the above items change over time
4. How non-EDC social studies classes compare to EDC classes on the above items.

While classroom observation was expected to provide most of the data to test the above questions, interviews with teachers amplified our perspective. Likewise, they supplemented the student interviews. Our plan was to conduct two interviews with each teacher whose class was observed. The interviews were open-ended and covered such topics as the teacher's evaluation of the course, attitudes about education, and reactions to the workshops.

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[1] See Page V-42, for comparison of the Interaction Analysis and EDC observation methods.

II. Field Work, 1967-1968

To a great extent, the purpose of the first year of field observation was to develop a useful technique for observing and analyzing class sessions. While the general format remained constant over the year, certain items were added and others deleted in a mid-year revision. The revised version is included in this report. In terms of the data themselves, we sought answers to two general questions:

1. How is MACOS used in real-world classrooms?
2. Can we discern a change in teaching style and classroom atmosphere over time, which could be attributable to the MACOS experience?

We observed a total of 61 class sessions,[1] of which 11 sessions occurred before the teacher had begun to teach MAN: A COURSE OF STUDY. Those pre-MACOS observations were of regular social studies, if that were possible. (In some cases, teachers chose to ignore social studies work until they received MACOS materials; in others, scheduling precluded visits to social studies lessons.)

A major focus of the 1967-1968 observations was the change in teaching style and classroom atmosphere during a teacher's first year using MACOS. To determine the extent to which there were discernible changes in pedagogy, we extracted a matched sample of 13 classes with early and late observations. Contingency tables were constructed, based on the first and last observations in these classes. The bulk of the early observations (85%) were of non-EDC lessons. That is, the early data are from classes using another social studies course before MACOS was begun, or classes in which another subject (e.g., science or math) was being taught. All of the later data relate to MACOS.[1] In short, the evidence of change shown below would seem to be an indication of the results of implementation of a new curriculum, holding constant the teacher and students. The data do not indicate differences between early and late MACOS work.

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[1] Four men and 14 women teachers were observed in three large, inner city systems and two upper middle class, suburban systems on the East Coast. Seven teachers were in their 20's, seven in their 30's, three in their 40's, and one over 50. Observations were made of 48 fifth grade and 13 sixth grade class sessions.
In terms of their physical characteristics, the observed classrooms were relatively pleasant places. Many of the schools were old (more in the cities than in the suburbs), but none of the classrooms were considered depressing. Rather, they were cheerfully decorated with student work. All had movable furniture at which boys and girls normally sat together in informal seating arrangements.

Nature of Lessons

With regard to the objectives of the observed lessons, we found that almost half the sessions (no change from early to late) were information-oriented. Some were aimed more at understanding of concepts at the end (46% to 62%), but much fewer were directed at skills (62% to 23%). The observations confirm what we know about the MACOS curriculum: it emphasizes conceptual development, while continuing to provide the student with a wealth of information. The information content of the Man and Animals unit is perhaps higher than that of the Netsilik unit, which delves more deeply into the realm of emotion. And while the development of various cognitive skills is a goal of this course, there is less overt concern with skills in MACOS than in many other curricula. Learning to ask questions, for example, is an intellectual skill which MACOS seeks to promote, yet it is unlikely that it would be the objective of a lesson.

Another indication of the nature of a lesson is whether it would be classified as symbolic or enactive; that is, are the students thinking or doing? As one might expect, class sessions leaned heavily on the "symbolic" side. But while no lesson was classified as "enactive," the percentage of lessons described as both enactive and symbolic increased from 0% to 23%. In none of the early lessons were students doing work of an arts and crafts nature; in some of the later lessons there was opportunity for this form of expression.

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[1] 46% were Man and Animals lessons, 46% Netsilik, and 8% MACOS-related.

In terms of specific classroom activities, observation data show significant increases in the amounts of manipulative work, role-play, and reading. Statistically significant decreases occurred in open-ended discussion and in debate. Most of the other dimensions revealed little change over time. Many of the classroom activities, for example, occurred to the same degree in the early (mostly non-MACOS) and late (MACOS) lessons. Writing, viewing, listening, question-answer, and guided discussion -- all showed no significant differences over time. Since the 1968-1969 data show significantly different results in this area (see page 9ff), it may be that the 1967-1968 matched sample of 13 early and 13 late observations was too small to be an accurate measure of what occurs in the classroom. Or it may be that the teachers sampled in 1967-1968 were familiar with and used many of the techniques suggested in the MACOS manuals before they taught the course.

Seating

A slight change was noted in classes' seating arrangements. 39% of the observed classes sat in rows during early observations; only 23% did so at the end. Instead, children were sitting in small groups, circles, etc. Given the interactive nature of MACOS, a spatial arrangement which maximizes verbal communication and which enables students to relate to each other, rather than just to the teacher, would indicate movement toward the goals of the course.

Teacher's Stance

Teachers' movements around the classroom increased considerably from the beginning to the end of the course. For example, the "Much movement" category increased from 25% to 50%.

Teachers moved physically closer to students, though change in this dimension was small. 90% were "Apart from Students" in early observations; 67% were so observed in the later observations. While the majority of teachers maintained spatial distance, by the end of the course, one-third of them were spending part of the lesson in close proximity to children.

Teacher's Sensitivity

The amount of ire displayed by the teacher markedly decreased over time, from 46% of the observed teachers showing anger sometime during the lesson at the beginning of the year to 8% by the end of the year. "Observable Pleasure" increased slightly, 15% to 23%. But most teachers showed neither emotion at the end of the year (31% early, 62% late).

Teacher-Pupil Relationship

Teachers monopolized the class less as the course progressed. 62% talked more than half the time in early observations. In late observations, only 23% talked more than half the time. Students gave longer responses in the late observations, increasing from 55% to 73% in this category.

Similarly, students were more apt to raise issues for discussion during the later observations: in 46% of the early observations students did so, while in 69% of the later ones there was evidence of student-initiated discussion. Likewise, the students spent most of the time answering the teacher's questions in 92% of the early lessons, versus 77% of the late lessons.

There was movement away from individual teacher-student dialogue toward more student-to-student exchanges during the class sessions. Student-to-teacher-only exchanges decreased from 46% to 15%, while the category of "both student-to-teacher and student-to-student exchanges" rose from 31% to 54%. Interestingly, "exchanges primarily student-to-student" remained constant at 23%.

Additional evidence that MACOS classes were less teacher-centered than early, predominantly non-MACOS lessons lies in the source of questions asked in class. In 85% of the early lessons, questions were asked by the teacher. At the end, in only 55% of the observations were questions primarily from the teacher. In 36% of the lessons, they came from both; in 9% of the lessons, questions stemmed primarily from students. This difference in the origin of questions reflects a change in pedagogy, the teacher having encouraged question-asking. It also relates directly to the curriculum itself. MACOS is an open-ended curriculum designed to raise questions, present issues, suggest ways of thinking about problems, not to provide answers. Students find that asking as well as answering is a legitimate activity. They are also prompted by curiosity about inherently interesting subject matter.

The dimension which best summarized the ways in which students and teachers relate to one another was "teacher role." Clearly, teachers moved from a position of dominating the class to one of facilitating learning:

Role	Early	Late
Authority	38%	15%
Guide	54%	31%
Resource	8%	46%
Non-participant	0%	8%

As the curriculum developers had hoped, the late (MACOS) lessons revealed that teachers had adopted a student-centered pedagogic approach. This information on teacher role correlated with the above findings about the nature of verbal interaction in early and late observations.

Other Findings

On most of the other items in the 1967-1968 Observation Form, change did not occur. In a few instances, such as "generalizations," it was decided that the dimension was too vague to be accurately assessed, and the item was not included on the 1968-1969 form. Negative change was revealed on two dimensions: student apathy (non-participation) increased, and teachers' preparation decreased.. The former situation is likely explained by the fact that final observations were conducted close to the end of the school year, and the weather was hot. Similar results were not recorded this year.

When one considers the innovative nature of the course content, it is not surprising that teachers seemed less prepared to teach MACOS. Teachers using the course for the first time had a great array of information and concepts to assimilate, and in interviews the teachers often expressed the view that they were just learning the course that first year.

Conclusions

The changes observed in classroom activities and overall atmosphere tend to be from a teacher-centered, authority-oriented classroom to a more open, student-and-learning-centered situation. Moreover, the lesson content became less informational and less purely symbolic, more conceptual and enactive. From these data (pre-MACOS and MACOS observations of the same classrooms), we see that curriculum innovation does have an impact on class life, and we can begin to understand the direction of that influence.

III. Field Work, 1968-1969

In our second year of classroom observation,[1] we sought to expand and clarify original questions about how MACOS is used in the field, and how it compared with traditional social studies curricula.. School administrators in some of the participating systems tended to feel that a comparison of new and traditional curricula within the same system would be particularly disturbing to all concerned. Therefore, we usually observed non-MACOS and MACOS classes in different systems, and the comparison of MACOS and other social studies programs is based on a sub-sample selected for its socio-economic and educational comparability.[1]

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[1] Five members of the evaluation staff made 41 observations of MACOS lessons and 20 observations of other social studies classes. Seven MACOS teachers -- three men and four women -- and four other social studies teachers -- all women -- were visited. By chance, MACOS teachers were young: five in their 20's, one in the 30's, and one over 50. Non-MACOS teachers spread more evenly in age: two in their 20's, one in the 30's, and one in the 40's.
It appears to us that MACOS teachers observed this year are a more representative cross-section of the profession than those sampled last year. There could be a relation among innovation, voluntarism and capability. That is, a radical and new program, such as MACOS, would attract those teachers who were most dissatisfied with existing curricula, who had the confidence to try something new, and who might already in their work have been using the new pedagogy found in MACOS. This would be especially true if teachers actually volunteered to take part in the first large-scale field trial, as the curriculum developers hoped they would. As the program grew older, even by one year, and filtered through the school system, the less adventurous might volunteer or be volunteered to teach it.

Looking further at the background data for the MACOS and non-MACOS groups, we find similar class size (about 23 students) and ability grouping (all classes observed were heterogeneously grouped for social studies). MACOS was generally considered part of the social studies programs by the teachers using it; in only one case was it viewed as the science curriculum. There is slightly less comparability in grade level -- MACOS was taught to five fifth grade and two sixth grade classes, whereas the control classes were all fifth grade. Corroborating our findings of the previous year, we found that children in MACOS classes sat in rows only about 20% of the time, but that the figure almost doubled (38%) in the regular social studies classes. Also, it is interesting that three of the four control classes were studying U. S. geography (products and resources of the various states, with a small amount of historical background), and that the fourth class was in a small, progressive private school.

Throughout the checklist, the MACOS classes differ significantly from other classes, and the difference is in a positive direction. That is, if one hopes that education will be student-centered, conceptual in content, and multi-media, then MACOS classes score "better" than do the other groups.

The most obvious message from the checklist data is that MACOS classes are, in fact, different from other social studies classes. Looking at the percentage of sessions in which various activities occurred, we can see that MACOS teachers were using the methodology

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[1] To insure demographically matched samples, we exlucded from this data observations of MACOS classes in an upper-middle-class suburb and non-MACOS classes in a private school. The comparison, then, is between 25 MACOS and 15 traditional social studies lessons in urban and lower middle class suburban schools.

CLASSROOM ACTIVITIES

ACTIVITIES	MACOS	NON-MACOS
Arts and crafts	24%*	0%
Viewing	44%	7%
Reading - text	56%	80%
Reading - other	4%	13%
Writing	36%	27%
Lecture by teacher	8%	27%
Question-answer	60%	80%
Guided discussion	36%	0%
Open-ended discussion	20%	0%
Role-play	4%	0%
Listening (records, etc.)	12%	0%
Student report	4%	7%
Laboratory	0%	0%
Other (specify:____________)	24%	13%

*Percent of sessions in which activity occurred. Observers enter all activities.

suggested; we can see also that traditional social studies programs are severely limited in their range of classroom activities.

When we began this research, we did not expect to find differences of this order of magnitude between the two sets of classes. As our observations progressed, however, it became clearer to the staff that traditional social studies classes possessed a deadening uniformity. Description of lessons may help to illustrate to the reader the dynamics of these admittedly surprising results.

In a predominantly white, lower-middle-class, urban school, students were studying about the automobile as part of a unit of transportation. The teacher began the lesson by asking students to open their books and calling on one child to read, "Perhaps it was the automobile that most changed the American way of life in the 1900's." The teacher interrupted the reading to ask, "How did it change the way of life?" Children raised their hands to offer answers, and the teacher called on them. Single phrase responses included: "Make it easier to visit" and "Make it easier to do shopping." The observer noted that the teacher failed to probe any of these responses, even though each of them could have led to a good discussion.

Children took turns reading aloud. The teacher asked, "What problems have been caused by the automobile?" Accidents and air pollution were the responses. The observer commented that space used by highways was not mentioned, even though bitter controversy was being waged in the city over the construction of a major highway. "What kinds of safety devices are being legislated?" the teacher continued. Children responded with a list of safety features. "Why are automobile companies so slow to install them on their own?" As a child tried to answer, the teacher interrupted, "Yes, they want time to test them out for themselves, don't they, to make sure they are really good ideas?" Perhaps the most disturbing thing about this lesson was the failure to realize the possibility of serious discussion. Nonetheless, the observer's final comment was that it was "by far the most awake session" he had observed in this class.

The following lesson occurred in a white, working-class small city. The study of the Puritans and the Massachusetts Bay Colony began with the teacher commenting, "Last week we read about one group of people who came to America: __________." Her questions were often asked in a fill-in-the-blank style, calling for single word, factual responses. "And yesterday we read about another group of people: ____________." Almost all her questions checked recall, and she responded to children's statements as an authority. An answer was either "right," -- or, if it was incomplete, she asked, "What else does the book say?" As the lesson progressed, children read short sections aloud from the textbook, and the teacher continued to ask students to recall what they had just read. For example, "What kind of people were the Puritans?" Student: "Strict and thrifty." Teacher: "Good, what does thrifty mean?"

Only once did she ask an opinion question: "Were the Indians wrong in fighting for their land?" but she cut off student responses by continuing, "We weren't all right, let's put it that way." And only once did a student initiate an exchange, "When the chief dies, the Indians stop fighting." Rather than seeking other students' ideas on the subject, she said simply, "That may be. I don't know."

It should be remembered that a number of different observers collected the data independently of one another and that they had guidelines to help them determine the category for a given activity. We feel that we have taken reasonable precautions to insure objective data-gathering, and yet we recognize that readers may find some results difficult to believe. All we can say is that the evaluation staff was similarly incredulous and that we recommend that readers actually visit the elementary school social studies classes to understand first-hand what is occurring.

Certain of the MACOS--non-MACOS differences can be seen as the direct influence of course materials. MACOS provides the teacher with a wealth of audio-visual aids; it is reasonable, then, that MACOS classes spend much more time listening and viewing than do others. Films for other social studies classes are available, certainly, but the logistics of obtaining them, their questionable relevance to a particular course, and the generally low quality add up to their being of little importance to the typical curriculum. In no regular social studies class observed were the films an integral part of the course, to be used as a source of data. Rather, they were a supplementary "treat."

One of the pedagogical goals of MACOS is to provide students with a variety of learning situations. Besides the visual and audio input, MACOS teachers considered manipulative or enactive work (arts and crafts) a legitimate part of the course experience. Not only does a child in a MACOS class have a chance to collect data in a nonverbal way; he also can demonstrate his knowledge nonverbally. In some cases, the manipulative exercises were components of the course (environment boards); other times the class developed its own activities (one group made a troop of papier-mache baboons).

Section G of the checklist, "Percent of Lesson Devoted to Verbal Activities," confirmed the data on the variety of media in MACOS classes. This confirmation is presented in the table at the top of the next page.

Percent of Lesson Spent in Verbal Activities	MACOS	Non-MACOS
100% of lesson	36%*	86%
75% " "	44%	0%
50% " "	12%	7%
25% " "	8%	7%

*Percent of sessions

86% of traditional social studies sessions were purely verbal, whereas only 36% of MACOS sessions were equally verbal. Further, while both groups of classes are primarily verbal in nature, there are somewhat more predominantly non-verbal MACOS sessions (20% vs. 14%). MACOS classes spread more evenly through the range than did the others, though the predominant MACOS mode was a primarily verbal lesson.

In terms of verbal activities, reading is a major input in both sets of classes. Since there is a small range of activities in regular social studies classes, it is logical that reading is more important here than in the MACOS sessions. The pattern of non-MACOS classes is clear: children read from their text and answer the teacher's questions. Reading and question-answer are the major modes of behavior in MACOS classes also, but to a significantly lesser degree. Perhaps the most telling difference between the two social studies curricula lies in items which specify the verbal interaction which occurs in class. In MACOS classes, this interaction is rather open in nature. MACOS teachers rarely lecture. They do rely on question-answer, but also engage in a fair amount of open and guided discussion. There is no real discussion in non-MACOS classes. (It should be noted that "discussion" is one of the most overworked terms in the elementary school teacher's vocabulary. Teachers tend to call all verbal interaction "discussion," but actually they often are dispensing information or asking questions to which there is one correct answer. In question-answer, the questions usually come from the teacher; they aim at specific answers; and, once answered, they are complete -- comments do not build on one another.)

Why do we find no instance of genuine discussion in the non-MACOS classes? First, because the traditional social studies content does not lend itself to questioning, conjecturing, or offering opinions.

The textbooks used set forth a factual narrative which itself raises no questions. The questions offered in the teachers' guide or at the end of the chapter check factual recall and clearly emphasize the acquisition of information. Second, and an outgrowth of the first, is a classroom sociology in which the teacher acts as a dispenser of knowledge or as a judge. (Is a student's response correct?) There is no ground on which the teacher and students meet as equals, since personal opinions and experiences are not legitimate inputs into the discourse.

Less difference occurred in the structuring of activities in both groups of classes. In both, activities were sequential (only one activity occurred at a time) -- MACOS, 80% of the sessions; others, 87%. Some simultaneous activities occurred in 20% of MACOS and 13% of other social studies sessions.

Greater diversity did appear on the item which asked for the observer's estimate of the objective of the lesson:

Objective of Lesson	MACOS	Non-MACOS
Information	76%*	100%
Concepts	56%	0%
Skills	16%	33%
Interpersonal behavior	8%	0%
Objective unclear	4%	0%
Other	0%	0%

*Percentage of sessions in which this objective appeared. Observer could check one or two objectives for a lesson.

While both groups of classes have primarily informational goals, information per se is less important in MACOS than in non-MACOS classes. Concept development is the aim of more than half the MACOS sessions, but of NONE of the other social studies lessons.

Again, we found, and we expect the reader will find, the absence of conceptual objectives in non-MACOS classes difficult to accept. Descriptions of a non-MACOS lesson which was categorized as "informational" and of a "conceptual" MACOS lesson should make the difference clearer.

The following lesson on the Rocky Mountain States took place in a lower to lower-middle-class urban school. Students first recited their answers to homework questions about the cities and products of the region. At times the teacher interjected, "Where did you find that?" "Page 222." Other teacher questions were, "What did you find out about Butte?" "What kinds of ores are mined?" "What is open-shaft mining?" The observer noted that much frantic hand-waving greeted each of the teacher's questions; pupils vied with one another for a chance to answer.

At one point the most active, verbal, and apparently brightest child was called on to give an answer in his own words. Instead, he read an answer from the book, and when reminded not to read, he became quite upset and continued to read. After a couple of attempts, the teacher called on another pupil. Students spent the last part of the period using their workbooks to find the major cities, products, and interesting sights of particular mountain states.

In a MACOS class in a middle-class, suburban community, the following lesson on communication occurred. Students first listened to a record in which Irven DeVore described how he used baboon sounds to escape danger. Afterwards, the teacher asked how and what DeVore had communicated. A number of students gave replies such as friendliness, that he meant no harm, etc. The teacher then created a human analogy to the situation in the record, and the students discussed hypothetical outcomes.

To help children understand the power of human language over other forms of communication, he presented them with a problem situation: They were to work in groups to solve spatial relations puzzles, but they were not permitted to talk to one another, nor could they use speech-substitutes such as pointing. After the groups worked on their puzzles for a while, the teacher stopped them, pointing out that normally they could have completed the task in about three minutes. The class talked a bit about the necessity of being able to talk, and then the teacher asked them how they felt when they couldn't communicate. A number of children described emotions of frustration and of wanting to help others.

Students then gave examples of human non-verbal communication (anger, hunger, etc.), and the teacher asked, "Do they have anything in common?" One boy explained how all the items expressed feelings. The guided discussion closed with another student pointing out that the list referred to events in time present.

It would seem that in MAN: A COURSE OF STUDY, factual data are important, but only as a step in the development of broader areas, generalizations, etc. Facts do not have a life and legitimacy for their own sake. On the basis of lesson objectives, we can infer that the Brunerian pedagogy is operative: learning is a process in which students collect and analyze data to reach conceptual understanding and unfortunately, this does not happen in traditional courses.

To summarize the information on classroom activities, the two sub-samples indicate major differences in what actually occurs during the lesson. MACOS classes have a wide range of activities, emphasizing non-verbal as well as verbal learning modes. And in terms of verbal behavior, MACOS classes are more apt to operate on a conceptual level and to allow students as equals in a process of group inquiry.

Evaluation of Non-Verbal Activity

Low student interest			3.3	4.9				High student interest
Less than 1/3 participation					X			Almost all participate
Quiet		X						Noisy
Students have no clear sense of purpose					5.0	6.0		Students have clear sense of purpose
Teacher's role: authority		2.5		4.4				Non-participant
		guide			resource			

In this and the subsequent sections of the observation checklist, "X" indicates the approximate value of items for which there is no significant difference between MACOS and other classes. MACOS classes are circled.

Non-verbal activities might be: watching films, listening to records, doing arts and crafts, etc. When the class is so engaged, we find a high degree of participation (more than in verbal activities) which is roughly equal in both types of classes. Student interest, however, appears higher in MACOS classes, perhaps because non-verbal work is a meaningful, integral part of the curriculum. One of the largest differences between the two samples is in teacher's role -- non-MACOS teachers are rather directive (though less so than they are for verbal activities), whereas MACOS teachers more often assume the role of facilitator and resource. The children seem to have more freedom. In light of the teacher's position, it is interesting that the noise level in both groups is equally low. It should be noted that the observer's impression is dependent on his expectations; possibly EDC staff members have a greater tolerance than would some teachers. What is crucial, however, is the relative noise level of the two groups. The fears of some teachers and administrators that youngsters are unable to handle increased freedom appears unfounded.

Also related to the teacher's role is "student's sense of purpose," the only dimension in the checklist in which MACOS classes score lower than do the others. MACOS teachers are less directive the children appear less sure of what they are to do. If such a correlation continued to hold in further testing, it would raise an important question for teachers to consider: is there value in ambiguity? Should task clarity be sacrificed to permit a more open teacher-student relationship?

It is useful to examine the evaluation of verbal activities in terms of teacher and student behavior. We already know that a good deal of verbal interchange takes the form of questioning and answering. Looking at the nature of the questioning, we find that questions came primarily from the teacher in both EDC and non-EDC classes, and that the number of questions asked is comparable. The questions, however, differ greatly in their fact and opinion content. In non-MACOS classes, questions almost always call for factual recall; in MACOS classes, there is a more even mix. The nature of the questions

Evaluation of verbal aspects of lesson

Factual questions	1.3		3.6					Opinion questions
Short answer	1.3	2.6						Lengthy response
Questions mostly from teacher		X						Questions mostly from students
Teacher asks few questions					X			Teacher asks many questions
Exchanges largely student to teacher	1.4	2.1						Exchanges largely student to student
Students ignore each other's statements			3.5		5.0			Students listen to each other
Many irrelevant statements					X			Statements relevant to topic
Students give few personal examples		X						Students give many personal examples
Teacher doesn't draw out students			3.1	4.6				Teacher makes obvious effort to draw out students
Teacher sets and controls agenda	1.1	1.8						Students initiate topics of discussion
Student interest low			3.2	4.2				Student interest high
Less than 1/3 participation				X				Almost all participate
Quiet			X					Noisy
Students have no clear sense of purpose				X				Students have clear sense of purpose
Teacher's role: authority	1.4	2.4						Non-participant
		guide			resource			
Quality of verbal activities -- poor		2.5	3.7					Quality of verbal activities -- excellent

(One item, "Students' reference to materials," was excluded from analysis because it was answered in only one third of the non-MACOS observations. It would seem that the item is unclear and, in fact, of dubious importance.)

correlates with the presence of guided and open discussion in MACOS classes and the total absence of discussion in other classes -- one can't discuss facts. Two reasons for this difference in the kinds of questions asked are the curriculum itself (Are issues and open-ended questions embedded in the content?) and the teachers' guide (Does it suggest discussion-type questions?)

We were surprised, at first, to find no significant difference between MACOS and non-MACOS teachers in the number of questions they ask, but this behavior is confirmed by Amidon and Flanders' study of teacher roles. They describe teachers as direct and indirect, categories which roughly correspond to tendencies of non-MACOS and MACOS teachers. (The low end of scales related to teacher directedness indicates greater teacher control and direction; non-MACOS teachers consistently are lower than MACOS teachers on such items.) Amidon and Flanders report very little difference between direct and indirect teachers in the amount of time spent questioning; similarly, we find insignificant difference between non-MACOS and MACOS teachers here.

In other aspects of teacher behavior, such as teacher's role, we again find important differences between MACOS teachers and other teachers. The MACOS teacher is best characterized as a guide; the regular social studies teacher, as an authority. The non-MACOS teachers exercise total control over verbal processes, scoring 1.1 on "Teacher sets and controls agenda/Students initiate topics of discussion." MACOS teachers (1.8) are controlling also, but somewhat less so. And looking at the degree to which the teacher draws out students, we find that MACOS teachers make a greater effort to do so (4.6 vs. 3.1 for other teachers.)

Summarizing the data on teachers' behavior during verbal activities, we can discern a classroom pattern of teacher-centeredness in non-MACOS classes and student-centeredness in the MACOS group. Student-centeredness involves a basic respect for the student as a person who is capable of some self-management (less teacher direction) and whose thoughts and opinions are a valid contribution to the learning experience (more opinion questions and discussion).

What sorts of student behavior do we find? We know that the teacher, not the students, structures the nature of class activities, and that some aspects of student behavior are little more than reflections of teacher behavior. "Length of response," for example, shows that students in MACOS classes give much longer answers (3.6 vs. 1.3), as we would expect from the nature of the teachers' questions. The information on the pattern of verbal exchanges reveals that a student-to-teacher response is the typical mode, though there are significantly more student-to-student exchanges in MACOS classes. This, too, seems related to teacher behaviors -- allowing open discussion, asking questions to which students can express a variety of responses and allowing and encouraging students to speak to one another. In most of their classroom life, students legitimately talk only to the teacher. They must be taught to relate to one another.

MACOS pupils seem to listen to one another, scoring 5.0 (vs. 3.5 for others). They appear to be more interested in what is happening in class (4.2 vs. 3.2). Both sets of behaviors seem related to the simple fact that in the MACOS group, students have more to do and are more important to the life of the class than are pupils in other social studies classes. The summary statement about the content and process of verbal activities (quality: poor/excellent) is consistent with the specifics already discussed: quality is higher in MACOS classes.

A number of other items about student behavior reveal no significant difference between MACOS and other classes, although the MACOS scores are slightly higher. Relevancy, noise level, sense of purpose, personal example, and participation are about equal for the two samples.

It is interesting that, while two-thirds of the teacher-behavior items reveal significant differences, less than half the student-behavior items do so. This difference in student and teacher scores may reflect the process of curriculum innovation in the classroom. The closer one is to concrete curricular materials, the more accurately the classroom reflects the curriculum model. Some of the activities in MACOS (such as watching films) are virtually teacher-proof; others, especially questioning and holding discussions, are dependent on the attitudes, priorities, and skills of the teacher. We would suggest that variation between the MACOS and control groups is greatest on those dimensions which are most closely related to the curriculum itself. Differences between the two groups decrease as other variables (especially the teacher) become more important.

The items on students' behavior seem to show that students do not respond solely to the course materials. Their behaviors are in response to an overall school environment, to a teacher, and to that teacher's particular presentation of the materials. MACOS clearly influences the teachers' behavior. It has an important impact on students also, but itseffect is filtered through the teacher.

Classroom Atmosphere

Teacher is authoritarian with regard to student behavior		2.0	3.6					Permissive
Teacher is reserved		2.4		4.1				Expressive
Teacher doesn't show pleasure	-	2.8		4.2				Shows pleasure
Teacher doesn't show anger			X					Shows anger
Teacher's voice extremely loud				X				Extremely soft
Teacher ill-at-ease			3.6		5.1			Relaxed, enjoys session
Teacher is bored			3.8		5.1			Involved with subject
Teacher talks down to students -- much			3.1	4.9				None
Class is teacher-dominated	1.1		3.4					Has tone of cooperative venture
Teacher's style is idea-oriented	1.5		3.0					Student-oriented
Teacher's stance: apart from students		2.3		4.4				Physically close to students
Amount of teacher movement (use only spaces 1 = none, 4 = some, and 7 = much.)			3.4	4.6				

("Overall student interest" and "overall student participation" were excluded from analysis because these items simply summarize the same dimensions for verbal and non-verbal aspects of the lesson.)

The last section of the observation checklist consists of a number of items which define a teacher's basic style or approach to the students and the curriculum. It attempts to describe a teaching "personality." MACOS and non-MACOS teachers differ on 83% of the items, being similar only in their tendency not to show anger and to speak in a moderate tone.

MACOS teachers, as a group, are more open in their relationship with the students than are the others. The teachers using the EDC curriculum are more expressive (4.1 vs. 2.4), and they are so in a positive way -- they are more apt to show pleasure (4.2 vs. 2.8), but no more likely to express anger. Some aspects of their attitudes find expression in physical terms: MACOS teachers move about the room more than do others and are more apt to be physically close to students. The latter would involve such things as taking part in a student group or conducting the class from a sitting, rather than standing, position. The aim is to minimize social and psychological distance in a physical way. These data support findings of the 1967-1968 observation work.

Teacher control over the classroom is more complex. There is no such thing as a teacher-proof curriculum. In the case of MACOS, the teacher interprets and mediates, and the course reaches students through the teacher. While students relate to one another more often and have more opportunities for independent work in MACOS classes, it is the teacher who organizes the class so that these things can occur. Perhaps the best image of the MACOS teacher is that of orchestra leader or theater director. The role demands a great deal of work, but if it has been done successfully, the final product appears effortless and spontaneous. In terms of our checklist, the issue is not whether a teacher is in control -- they all are -- but whether the teacher is controlling and dominating. MACOS teachers are less apt to dominate the class than are others, as the following item indicates:

Class is teacher-dominated 1.1:___:3.4:___:___:___:___ Class has tone of cooperative venture

An important word in the item is "tone." Teachers and students can never be truly equals, but in the MACOS class there is more opportunity for them to act so. In short, MACOS teachers are more subtle in their control. A related question is the amount of control desired by the teacher: MACOS teachers allow greater freedom in their class.

Teacher is authoritarian
with regard to student
behavior ___:2.0:[✓ 3.0]:___:___:___:___ Permissive

The amount and nature of teacher control reflect, in part, the teacher's opinion of the students. If he has respect for them, he is less likely to feel the need to control them and to prevent them from "getting out of hand." (MACOS classes are as quiet as others, although MACOS teachers are more permissive.) If he feels that students have legitimate contributions to make, he is less apt to relate to them in a "talking down" manner. And it seems reasonable that the nature of the curriculum plays a part in molding the teachers' attitude toward, and expectations about, students. Minimally, curricula reinforce teachers' attitudes about students. If a teacher is inclined to treat pupils as important persons and the curriculum does also, appropriate actions will follow. Or the curriculum can provide the teacher with a vehicle for making operative his notion of the way the classroom should function.

Conclusions on MACOS and non-MACOS classes

The major questions to be answered by on-site evaluation of MAN: A COURSE OF STUDY and other social studies courses was: "What is the effect of innovative curricula on comparable classroom situations?" On the basis of the data, it seems to us that curriculum has an important role in determining the nature of class activities and the relation of students to the teacher and to each other. (Attitude checklists completed by MACOS and non-MACOS students offer some corroboration of the findings.) Two limitations of this research, the small size of the sample and the possibility of non-comparable samples, are easily remedied by larger replication of the study.

Another problem remains: it is possible that the MACOS teachers were different from the others in classroom style before they began using the new course, and that the observed disparities are due to a self-selection process, not to curriculum reform.

The 1967-1968 data, however, suggest that curriculum does produce changes in teaching style. That year, we observed teachers conducting social studies and other classes before they began using MACOS. Comparing those early (non-MACOS) and late (MACOS) class sessions, we noted a number of significant differences in teacher approach and classroom atmosphere. Here, teachers and students remained constant, curriculum changed, and differences were observed.

The teachers, too, tell us that their approach to social studies has changed. In interviews conducted toward the end of their first year, they commented:

> (This improvement in discussion -- do you think this is related to your style, or do you think it's related in any way to the content?)
>
> I've always done it...but I think this kind of material lends itself more easily than other kinds of things.
>
> (In what way?)
>
> Well, it provides an awful lot of sharing of ideas and discussion...
>
> ******
>
> I suppose I am less prone to be "teacher."
>
> ******
>
> My techniques have changed to the extent that I have been given a lot of new ideas. And I'm not just drawing on my own habits.
>
> ******
>
> (Is this method that you use different from the way you taught social studies in the past?)
>
> It is, very different. The social studies I taught in the past has gone from the textbook to maps and films. I think it's the type of material that more or less you would need a teacher to direct. Whereas this type of material, you can let the children go. I have used this type of technique in science and math, too -- discovery method -- and they enjoy it.

It would seem unlikely that the curriculum could reform an unwilling teacher. But as these excerpts show, there are many who use a traditional pedagogy until they are offered the option of change, and then they enthusiastically adopt new teaching strategies. The new curriculum provides an alternative to traditional approaches and makes it possible for a teacher to change his style.

Other Findings

Examination of observation data of MACOS classes disclosed that major change did not occur over time. In the few items which did show variation, change was both positive and negative. In the evaluation of verbal aspects of the lesson, we find that the teacher asked fewer questions during the late (last two)observations. This suggests either that students were raising more questions or that the teacher's questions elicited more discussion. Correspondingly, we found a slight increase in open-ended discussion over time. We also found that teachers were more expressive at the end of the year. The early observations (first two) were not conducted until November, so that we are not seeing beginning-of-the-school-year-hesitancy vs. end-of-the-year-familiarity. On the other hand, we found that teachers tended to draw out students less and students gave fewer personal examples at the end. The latter is surprising, since the Netsilik unit would be expected to yield more personalized discussion.

To answer one of the original questions behind this research, it appears that the process of teaching MAN: A COURSE OF STUDY for the first time and attending seminars does not produce observable changes between early and late MACOS work. Since the 1967-1968 data and comparison of MACOS and other classes do indicate the influence of curriculum on pedagogy, we conclude that this effect is immediate. When teachers begin the course, they alter their approach; there is no evidence of cumulative change.

Scores on the four early and late observations for each teacher did produce a useful methodological insight. A comparison of the abbreviated sample and the total sample scores on Section H, "Verbal Aspects of Lesson," and Section I, "Classroom Atmosphere," showed no significant differences. Of the 31 items in the two sections, on only one was the difference greater than 0.5. This indicates that repeated, in-depth observations are not necessary to obtain an accurate picture of the classroom, and that two sets of visits, reasonably spaced, are sufficient for our purposes. In practical terms, one could observe more classrooms with the same personnel and with less inconvenience to the schools.

Considering the possibility of a difference within the MACOS classroom related to demographic factors, we compared a lower-class, inner-city system with a middle-class, suburban system. As with other MACOS results, we found little difference between classrooms in the two settings. That is, variation between classrooms within either group was greater than the differences between groups. The following table indicates mean scores on the two most important sections of the observation checklist:

	Urban	Suburban
H. Verbal aspects of lesson	3.2	3.5
I. Classroom atmosphere	3.6	3.8

Only one breakdown of MACOS observation data showed important differences; i.e., separating the observations according to the orientation of the teacher. The item is defined in the notes on the use of the Observation Form as follows:

> An idea-oriented teacher would show primary concern with the material, whether it be facts or concepts. In another sense, he is task oriented. "Student-oriented" refers to a concern with students' behavior or interpersonal relations. For example, a teacher might direct discussion away from the specific EDC content to consideration of how the students worked together when they were arriving at some answer.

Neither orientation was thought to be better than the other. From previous field work, we knew of excellent teachers in both techniques (see pages 31ff for case studies).

Student orientation meant a score of 5 or greater on the item. The eight lessons which were student-oriented had a mean score of 6.1 on the item, while the 34 idea-oriented lessons averaged 2.6. Student-orientation was a stable characteristic of teacher style; this sub-sample consisted of four lessons of one teacher, three of another, and one of another.

Expressing it another way, two of the seven MACOS teachers displayed significant student orientation. Both teachers were white females; one taught in a ghetto school, and the other taught in a suburb. The table below shows the items in sections H and I on which the two groups differed significantly.

H. Evaluation of Verbal Aspects of Lesson

Factual questions			3.6	4.6*				Opinion questions
Short answer		2.6		4.0*				Lengthy response
Questions mostly from teacher		2.4	3.8*					Questions mostly from students
Teacher asks few questions				4.0*	5.2			Teacher asks many questions
Exchanges largely student to teacher		2.1	3.8*					Exchanges largely student to student
Students use few personal examples		2.8	3.9*					Students use many personal examples
Teacher sets and controls agenda	1.6		3.8*					Students initiate topics of discussion
Student interest low				4.5	5.6*			Student interest high
Quality of verbal activities -- poor			3.8		5.1*			Quality of verbal activities -- more excellent one

I. Classroom Atmosphere

Teacher is reserved				4.0	5.5*			Expressive
Teacher doesn't show pleasure				4.1		6.0*		Shows pleasure
Teacher ill-at-ease				4.9		6.5*		Relaxed, enjoys lesson
Teacher doesn't draw out students				4.7		6.5*		Makes obvious effort to draw out students
Teacher talks down to students -- much				4.9		6.4*		None
Class is teacher-dominated			3.4		5.9*			Has tone of cooperative venture
Teacher's stance: apart from students			3.9		5.4*			Physically close to students
Amount of teacher movement (Use only spaces 1 = none, 4 = some, and 7 = much.)				4.1		6.0*		

(*Indicates student-oriented lessons.)

The most striking thing is the extent of the difference between student-oriented and idea-oriented lessons. Significant variation occurs on 17 of 31 dimensions; in every difference the student-oriented lessons are "better." (Except for the fourth item, higher scores indicate the kind of pedagogy we hope to find.) In student-oriented sessions, pupils have a larger role: they give longer answers to predominantly opinion questions; they speak directly to one another more often; they ask more questions; they are more apt to influence the topics under discussion. They display more interest in the verbal interchange and, overall, perform better. In the student-oriented sub-sample, the teachers are correspondingly less dominating, and the class has the tone of a cooperative venture. The teachers are unlikely to talk down to students. They are expressive, very often showing pleasure; relaxed; physically close to students; rather active in their movement around the classroom. They ask fewer questions than do idea-oriented teachers, and they are very concerned about drawing out students.

The items on which two groups have similar scores are not shown above, but some are worth noting. We find that while teachers' orientations toward students and curriculum differ, their roles in the class (guide, resource, etc.) and their standards of acceptable behavior are similar. As we might expect, noise level of the classes is about equal. And while student interest varies, student participation does not.

As stated previously, neither end of the "orientation" dimension was thought to be a better approach to the class than the other. And yet the student-oriented sessions are overwhelmingly superior to the idea-oriented ones. A lesson is more likely to be successful if the teacher's concern is with the students than it is if the teacher is concentrating on ideas. Is this because the two clearly student-oriented teachers are superior teachers, whose lessons would be outstanding, regardless of their particular emphasis? We found that this is not the case by comparing the idea-oriented lessons of the selected teachers with those of the rest of the sample. No important differences appeared in "H," in the evaluation of verbal aspects of the lesson. The teacher's orientation during a specific lesson appears to have a direct effect on its character and quality. As we expected, items on basic elements of teaching style, Classroom Atmosphere, did continue to show some variations between the two groups, although the variation was less than in the initial idea-student orientation comparison.

What makes student-oriented lessons better than the idea-oriented lessons of the same teacher? Very likely it is that the students are aware of the teacher's concern for and interest in them and respond accordingly. Perhaps elementary school children are in greater need of nurturing behaviors than we suspect. Perhaps they are particularly interested in the behavioral issues which often appear in student-oriented sessions. It is important to the general atmosphere, too, that in student-oriented sessions the teachers are more relaxed about the subject matter. They aren't pushing as hard to get a point across, perhaps because they are more comfortable with the particular topic or because they have given it a lower priority.

IV. A Look at Teaching Orientations

In this section we will use interviews with teachers and verbal descriptions of lessons (section A of the Classroom Observation Form) to amplify the distinction between idea and student-oriented teaching styles. It is important to note that we found greater differences between styles of teachers using MACOS and those using traditional materials than between the styles of MACOS teachers. The curriculum has the major impact. The teacher's style of orientation, however, plays a significant role in explaining differences among teachers using the same course. Yet these differences are smaller and less dramatic than those caused by the presence of the innovative curriculum.

The student-oriented teacher possesses many of the characteristics of the archetypal elementary teacher -- a warm, mothering person, one who attends to the children's social-emotional needs and to their interpersonal behavior. Her approach to the classroom (and it is hard to imagine this teacher as a man) is that of the teacher in the "family" school, as described by John Dewey:

> In this school the life of the child becomes the all-controlling aim. All the media necessary to further the growth of the child center there. Learning? Certainly, but living primarily, and through and in relation to this living....

Such teachers tend not to be articulate about social studies as an academic discipline, or to evaluate critically the MACOS curriculum; they feel the course as much as they think about it. They like it because it "works"; that is, they intuitively know that it is helping them to achieve their goals (communication, verbal skills, group interaction, certain conceptual growth, etc.).

The idea-oriented teacher appears outwardly to be a more professionally concerned person. She is apt to use the terminology of current education in her speech; she is likely to be more analytical about the effect of curriculum on the students. Also, she tends to be more knowledgeable about and more critical of the course itself, questioning why it emphasizes this, why it slights that, etc. In defining her goals for social studies education, she indicates that she has thought more deeply about content goals than has the student-oriented teacher. Idea-oriented teachers are primarily concerned with learning tasks -- that students understand concepts and develop a range of cognitive and verbal skills. And they relate to students through the task; the relationship may be warm and open, but it has more of the flavor of colleagueship than of nurturance.

Beginning with their responses to a purposely ambiguous question about their general impressions and evaluation of the Man and Other Animals unit, we can see the difference in the concerns of idea-oriented and student-oriented teachers. One idea-oriented teacher said:

> The in-depth approach is really the most valuable of everything. The fact that children are not exposed to bits and pieces of information, but they are really given the opportunity to thoroughly discover and to interpret and to meet with new experiences.

She continued, when probed, to explain how the design of the materials contributed to students' interest in and understanding of the course. This teacher related the question to students' cognitive development. Another idea-oriented teacher emphasized conceptual themes of the course:

> I find that a lot of them have gotten the idea of the successive build-up of more and more complicated animals... By the time we finished seeing the chimp film, they really were convinced that there were an awful lot more similarities between man and animals than they originally thought.

The teacher was surprised (and clearly pleased) that the children could so clearly state major similarities and differences. She, herself, rapidly listed the important points children had made. It might be noted that student-oriented teachers are often unable to remember specifics of course content even when directly asked.

One student-oriented teacher responded to the same question by explaining how the unit should be shortened and finished, "I've had a ball." Emotional reactions -- the teacher's as well as the students' -- are important. Another teacher answered by considering in great detail the effect of the unit on students' behavior. This response to a vague but essentially content-directed question testifies to her primary concerns.

> Working with this material, where you are constantly talking about behavior, learning and behavior, and looking at this kind of thing, why animals behave the way they do, why people behave as they do, I feel very strongly that there is a great difference in the boys and girls. I see it particularly in their general manner of working... I can specifically cite a case of a boy in this class who came in December....

Student-oriented teachers are, by definition, less concerned with content than with children in their classes. Asked what the main point of MACOS was, a student-oriented teacher talked about making children feel that their ideas were important and not getting bogged down in details. The manner of reviewing the course should not be equated with the teachers' intelligence; rather, it is a matter of interest. Student-oriented teachers are only mildly concerned with content per se; they are vitally concerned with student behavior, and on this topic are very articulate.

> There is something about a child giving an idea, giving a thought, offering information the way it is accepted. I think if he gets in the habit of hearing the kinds of things he thinks about accepted or respected or even a bit of what he had said respected, then he is less fearful about bringing his thought out into the open.
>
> For many children, being children, a job is for here and now, and it's all over in a half hour. That doesn't mean that because Tinbergen worked for 30 years studying herring gulls that they understand the impact of that fully. I don't mean that at all. But long term planning, trying to talk with them about taking on a task at your own pace, not asking me "What is the deadline?" You, yourself, have to decide on when you begin work, how much you are going to do, and so forth. You have to make the decisions. I use that as a guideline. If children come in droves and say "Do you like this?" my only response is "Do you?" They shrug and go back. Most of the time I do that.

When teachers are asked to criticize the course, student-oriented teachers seem to be less reflective and evaluative. They are more apt to say simply, "It's great!" Suggestions for revisions might be to shorten the units and, interestingly, to reorganize the teacher's manual (from 1968 interviews).[1] However, the idea-oriented teachers did not make the same suggestion. Perhaps because they were more interested in the content, per se, they may have been more knowledgeable about the course. They expressed much more confidence that they knew where the material was leading and how the pieces fitted together. Student-oriented teachers like the MACOS design because it assembled important and interesting materials which were amenable to their primary goals, but they wanted the curriculum developers to do a bit more.

Idea-oriented teachers were more critical and expressed some dissatisfaction with the lack of provision in the course design for independent student work, with the absence of difficult reading to challenge the brightest students, and with the de-emphasis on skill development.

> I still think this stuff doesn't weigh as heavily on the development of reading skills and development of research skills which I think should come from this... I would also like to see a built-in kind of thing for the brighter kids, the better readers, to provide more of a range of reading level.
>
> I'd like to see more meat and potatoes... And, as I say, I'm not adverse to kids walking away with some tools in their basket, some knowledge and skills to go with them.
>
> ... more books on the salmon, more books on the herring gull, rather than just the booklets they have. (What kinds of information would you want included?) Probably more factual information. They're interested in going off on their own and learning more about it, other than looking at films and the film strips and booklets... So they could do projects.

Student-oriented teachers emphasize the interactive mode of social studies education to the extent that they do not suggest more individualized MACOS work. This is not to say they have no independent work, merely that they find sufficient opportunity in the course as it stands.

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[1] As a result of teacher experience, the elementary MACOS staff did restructure the teacher's guide.

Many of the differences between idea-oriented and student-oriented teachers are summarized in the way teachers of each type spoke about children in their classes. The idea teacher:

> He adjusted beautifully, and he really came out very nicely. And he digs into things on his own and does special reports and this kind of thing. And he's very good at deduction and making observations and critical thinking, especially the critical thinking area.

And the student-oriented teacher:

> ... this boy -- bright, but having been at a special school for very emotionally disturbed children -- was very different in his approach, was demanding of attention in the fact that he spoke out all the time, and I was amazed that during the first couple of months that no one ever struck out at him. I see him now with other groups of boys around him. You know, at first he would say, "Nobody likes me. I have no friends." And the fact that a group of youngsters in a highly competitive situation could be as warmly aloof is something. I think and truly believe that the kind of work in the social studies area has offered a great deal of thought for youngsters, and I think they do look at each other differently.

The value of MACOS for the first child, as his teacher saw it, was that it provided him with an opportunity for intellectual growth. It legitimatized his having an opinion different from that of the teacher and because of that made him eager to be seriously involved with the subject. According to the second teacher, MACOS helped to create a more human, accepting environment, in which a disturbed child could flourish.

What do these differences in teacher orientation mean in the actual operation of the class? All teachers considered here agree on the important aims of conceptualization and improvement of verbal skills, and all are teaching the same course. So variations in specific behaviors are small. One important difference was that idea-oriented teachers tended to have more high-powered, better organized lessons. Students did more things during the lesson, the whole pace was quicker. The lessons were more carefully thought out ahead of time, and usually achieved their objectives. Student-oriented teachers, who spent less time planning for class sessions and who relied more on intuition, were more likely to have disorganized, amorphous lessons.

An idea-oriented class: The classroom focused on the environment boards -- four of them occupied the center of the room, with student desks in a large square around them. The hour-long class lesson on the Arctic environment began with three students explaining imaginary animals they had created which would survive in the Arctic. The teacher then showed "Life on the Tundra," asking students to focus on a few questions -- Where does the animal get its food? Does it migrate? How does it defend itself? etc. Some students took notes during the film, although they were not told to do so. Afterwards, children grouped for discussion. Some read the notes they had taken; others commented on what they liked and disliked in the film, and others raised questions they had. Students examined the "Arctic" booklet, and some looked up animals in the encyclopedia the teacher passed around.

Toward the end of the period, she pulled the class together, to pool ideas. Her questions to them were very indirect and open-ended: "Any comment?" "What do you think?" She never gave answers herself, judged the correctness of a response, or repeated an answer except to turn it back into a question. When one boy asked why the hollow horns of musk oxen were strong, and no students knew, she suggested that the boy find out. Students presented some of the information and ideas they had acquired about Arctic life, including the reason why plants are low in height -- if they grew too high, they would topple over because the permafrost prevents the roots from growing deep. This lesson was typical of the many observed. It had a clearly defined objective, which it accomplished in a reasonable and involving manner.

In a student-oriented class: Each group of students was given a picture showing one stage in the process of a predator killing and eating its prey. They were to discuss the picture and list all the words that the picture inspired. After a while, students were given Structure-Function and Animal Adaptation booklets and tole to relate the booklets' concepts to the pictures. This activity did not occur in any group; children did not make the connections. It was unclear just what the teacher intended -- probably some sort of review in disguise -- but it did not happen. The problem of the lesson was that the goal was not clearly formulated in the teacher's mind; therefore, instructions were unclear. Students didn't accomplish anything in particular during the class. The teacher realized that the lesson had failed, and after a half hour break, taught a revised version to another MACOS class. Since the first class started with pictures (motivation) but couldn't relate adaptation concepts to the pictures, this time the teacher just passed out the concept booklets (without placing them in context) and then distributed pictures. She asked students for oral responses to pictures, and the whole class discussed them. But there was no relating of booklets to pictures. Afterwards, she gave a story-writing assignment: "Take the role of an animal and describe your life." Each separate activity was quite reasonable, but they did not hang together.

A second noticeable difference between the classes of idea-oriented and student-oriented teachers is the failure of the first to attend to social-emotional and behavioral needs of children. Student-oriented teachers, on the other hand, often restructure the content of a lesson to illustrate behavioral issues. The "idea" teacher whose lesson was just described kept students to the task but was not concerned with their interpersonal behavior. For two consecutive sessions the observer noted that in one student group boys refused to work with girls, but the teacher ignored the situation. Her approach was to make intellectual demands of the children and in this way to get them involved in the task. With such involvement, interpersonal problems hopefully would disappear.

A student-oriented teacher would be apt to interrupt the task to focus on the process of group discussion. In another session of the student-oriented teacher already described, she conducted a mini-lesson with one group of students who were having difficulty working together. She drew out the children on why they were behaving in a particular way and helped them to understand the interpersonal dynamics involved. Whether they finished the original task was unimportant; much more important learning -- in this teacher's view -- was taking place. Another student-oriented teacher used the MACOS observation lesson to underscore points about the children's behavior: While the whole class was discussing the way a scientist works and the importance of observation methods, a couple of students were engaged in an observation project. They were to record from behind a blind their observations of the behavior of members of the class. But they became silly and somewhat noisy. Rather than disciplining or ignoring them, the teacher encouraged the whole class to discuss the effect of the noise of the observer on herring gulls. Then they moved to the effect of observer noise on their own behavior -- they would act differently, and so the observations would be less accurate. By the end of the discussion, the children had learned why quiet on the part of an observer was necessary, had gained an insight into their own reactions, and felt that the noisy children had contributed to defining good observation methods.

In summary, it should be stressed that only in the abstraction do we find a pure type. Every teacher contains something of an idea and a student orientation; each is interested to some degree in promoting both conceptual and social-emotional growth in students. While classes bear an overall similarity based on a common curriculum and some shared values, however, teachers' major orientations contribute to creating two distinct climates. In both, valuable learning experiences will occur if the teacher is a successful practitioner of his style. Whether these differences in teacher style and classroom atmosphere produce continuing differences in the students cannot be answered here. In some cases, classes are organized on a departmental basis, so that students are exposed to a variety of styles throughout the school day. In all cases, students have been in a range of classrooms in their previous school years. And in all cases, their home environment has an important, probably primary effect. For some students, home and school reinforce one another; for others the approaches to the child are in conflict.

Since a child needs to grow in both task-centered and behavioral ways, it is likely that students should experience both teacher-orientations. For specific children at particular times, however, it is possible that one style is better than another. While this suggests further research, it should be remembered that in terms of MAN: A COURSE OF STUDY, teachers with student-orientations and teachers with idea-orientations have been successful in teaching the course.

V. Notes

Observation Instruments

The 1967 Classroom Observation Form contained categories about the physical aspects of the classroom, teacher style, instructional methods, and students' behavior (with subcategories within each). The observer was expected to make descriptive comments for each item, and to repeat the procedure every 20 minutes. Thus, if a class lasted a full hour, the observer would have three entries under "Teacher's style, stance." Division of the form into approximately 20-minute segments cued the observer to look for changes that occur within the class session. This was done because few elementary school activities last more than a half hour.

While this format was useful, certain drawbacks were inherent: verbal remarks had to be coded, and two or three entries for any item had to be averaged into one which would describe the entire class section. For example, "amount of teacher talk" was coded as:

1 -- talks amost all the time
2 -- talks more than half the time
3 -- talks less than half the time
4 -- almost none

If the teacher talked a great deal at the beginning of the lesson, practically not at all during the middle, and a moderate amount at the end, how should that item be coded? (This problem was greater in theory than in practice, because one observer made 95% of the observations during 1967-1968, and that person coded the Observation Forms.) Also, we had no consistent anecdotal record of class sessions.

With the expansion of the observation program, we revised the form so that the data would be more amenable to analysis, and so that many osbervers could readily use the form. The current format consists of a verbal description of the lesson, written as the lesson progresses, and a lengthy objective checklist, completed just after the lesson ends. A few of the checklist items (kind and structure of classroom activities, time sequence of activities and objectives of lesson) are essentially precoded versions of items which appeared on the first form. The observer also evaluates the class session along seven point scales. For example,

Factual questions ____:____:____:____:____:____:____ Opinion questions

Teacher is authoritarian ____:____:____:____:____:____:____ Permissive

An important difference in the two versions of the form is that now all judgments are left to the observer, not to the coder. Also, we originally divided each class session into time intervals; now the evaluation of the class session is divided into overall atmosphere, verbal, and non-verbal activities. Verbal activities are talking, reading, and writing; non-verbal activities include watching a movie and drawing a picture. Happily, we have found that the present system allows us to account for diverse aspects of a class session in such a way that the data are manageable. Observers find that once they become familiar with the form, it is quite easy to use.

Two Methods of Observation

It may be useful to contrast the characteristics of the EDC and the Flanders observation methods. Interaction analysis consists of scoring verbal interaction every three seconds into one of ten categories. The scores are then analyzed in matrices to create a profile of the verbal activity. Flanders' system is designed to assess the nature of whole-class verbal interchanges between the teacher and students. We are concerned with such interaction, but also with student-to-student exchanges and small group verbal activity. MACOS pedagogy often suggests group work, and any useful instrument must be appropriate for it. Further, the EDC method takes into account the non-verbal aspects of the classroom. Section F of the form assesses student and teacher reactions to non-verbal activities, such as viewing films, listening to records or doing enactive, manipulative projects. Section I calls for many judgments about the teacher's style, some of which are non-verbal characteristics (amount of movement around the room; whether the teacher's stance is close to or apart from students).

While both observation methods assess many of the same dimensions, the specific purpose of the EDC format makes it important that we obtain more detailed information about some dimensions. For example, one of Flanders' categories is "Asks questions: (teacher) asking a question about content or procedure with the intent that a student answer." We want an idea of how many questions are asked, but we also want to know the nature of those questions. (Are they factual or opinion?) The EDC and interaction methods ask for students' response; in addition, we ask how other members of the class respond to a student (Do students ignore each other, or do they listen to each other?)

We have learned from our analysis of interviews and other observation data that clinical data provide a depth and quality of information which is lacking in any purely checklist format. Observers, therefore, keep up a running commentary of the lesson as it progresses and make analytic remarks. For our purposes, the clinical data are more valuable than more frequent checklist ratings would be.

SECTION VI

TEACHER EDUCATION: EXPERIENCES IN THE FIELD

TEACHER EDUCATION: EXPERIENCES IN THE FIELD

I. Background

Realizing that the teacher is the crucial factor in the success of any classroom endeavor, EDC created not only curricular materials but also a full teacher-education program. MACOS contains detailed suggestions for new learning experiences and for new teacher-student relationships, and teaching the course requires participation in an in-service training program to facilitate these innovative directions. Summer institutes are run to train the leaders of the in-service seminars.

In 1967 EDC began its teacher-education program and nationwide implementation of MAN: A COURSE OF STUDY. Future workshop (or seminar) leaders from Boston, Denver, Newton, Mass., Oakland, Philadelphia, Washington, D.C., and West Hartford, Conn. met for a five-week training institute conducted by EDC staff. After a week of intensive sessions considering the philosophy, conceptual themes, and content of MAN: A COURSE OF STUDY, institute members spent three weeks observing EDC staff teaching the course to students in an on-going summer school. During this time participants often assisted the teachers and worked with small groups of children. Afternoon sessions consisted primarily of evaluating the morning lesson and preparing for the following day. The final week of the institute was devoted to preparation for the school year workshops. During 1967-68, these trainers conducted workshops for teachers using the EDC course.

In 1968 EDC expanded on the model of summer institutes training leaders who, in turn, assist teachers in teaching the course. Institutes were conducted by the previous year's workshop leaders in Jefferson County, Colorado, Marin County, California, Philadelphia and Washington, D.C.; and in Watertown, Massachusetts by EDC staff.

Participants conducted workshop programs for new MACOS teachers during the school. This general model for dissemination and teacher education has been expanded for 1969-1970.

II. Goals of Teacher Education

As stated in the preface to the Teacher Seminars (a series of plans, suggestions, and materials for in-service seminar sessions), one of the general aims of the EDC in-service education program is "to provide continuing support for the classroom teaching of new material." A comprehensive set of objectives are contained under this rubric: to assist teachers in developing the necessary informational and conceptual framework for working with MACOS in the classroom; to help teachers to implement specific pedagogical techniques; to facilitate the adoption of new approaches to learning and to children; to offer the necessary psychological support for a new venture.

Believing that the cause of greatest concern to new teachers is the learning of the course content, the EDC staff has attempted to facilitate this process in the seminars through previewing of materials and the discussion of related classroom activities. Specific topics are considered within the context of broad concepts and themes. Thus, the content-preparation aspect of the teacher education program operates on two distinct levels: the factual and the conceptual. A particular seminar might focus on specifics of baboon communication (factual) and also on an exploration of contrasts between baboon and human communication, the implications for the social structure of each, etc. (conceptual).

EDC cites a second function of the in-service seminar to be the preparation of teachers to teach MACOS through the examination and (hopefully) adoption of new pedagogic approaches. Again, this task concern has concrete and conceptual components. For example, teachers learn how to play the Netsilik hunting game by actually playing it during one workshop session. They are then encouraged to go beyond the details of "how to do it" to a consideration of the role and value of educational games in the classroom.

The EDC course of study suggests new ways to organize a classroom and new roles for teachers and students. Classroom activities include small group discussions, role play, clinical observation of the behavior of man and other animals. The curriculum developers feel many teachers are eager to try new approaches such as these, but often they need support and encouragement. The provision of psychological support for a new venture is thus intended as a third goal of the seminar program. EDC attempts to provide teachers with a setting in which they can vent their frustrations as well as announce successes, and get feedback from other teachers so that they do not proceed in a vacuum. It is hoped they will receive encouragement and help from seminar participants.

The most difficult aspects of pedagogy are those which aim at creating a new sociology of the classroom, new relations between teachers and students, and new attitudes toward the process of learning. EDC curriculum developers seek to encourage teachers to think of the classroom as a setting for teacher as well as student learning and to view the teacher as an important partner in the process, rather than as the dispenser of knowledge. The workshop-seminar is intended to provide the setting for teachers to experience this style of learning and more specifically, this new teacher-student relationship, and to reflect upon it with other colleagues, so that they can take greatest advantage of the new options that have been built into MACOS.

It is hoped that the workshop will be a participatory model for the kinds of behaviors EDC would like to see between teachers and students. As stated in the preface to the teacher seminars:

> The teacher education program is based on the primary significance of contrast and divergency. The seminar program provides a forum within which contrasts can be explored and divergent views can become a source of energy for learning. If we are concerned that education become more than a process of feeding students reified information, then we must be concerned that teachers experience not only the complexity but also the productivity of alternative ways of approaching a topic.

Beyond assisting teachers in their initial experience with MACOS, it is also hoped that the seminars contribute to a new spirit of professionalism.

> "The seminar program provides the time for the development of colleague relationships and offers questions for consideration that focus on the larger dimensions of the teacher's role."

To counterbalance the fragmenting and isolating tendencies of many school systems, the seminars aim at developing a colleague relationship based on common professional interests which are broader than the participants' specific teaching tasks.

A related goal is that the seminar program open the possibility of professional identification for teachers which is somewhat different from membership in a school system.

> "As institutions develop and grow, much of their effort and activity is necessarily directed toward maintaining themselves, protecting their functions and increasing their power vis-a-vis other institutions. The danger here is that institutions may lose sight of primary goals in the process. In education this danger may take the form of a shifting focus from the classroom -- toward the larger administrative needs of a school system ....

The degree to which any institution continues to serve its major objectives may depend on the emergence of smaller groups within the larger system that are effectively committed to the institution's primary goals. In education, these smaller groups ideally would be a colleague group of teachers committed to the teaching of children. Sharing common tasks and finding new ways of identifying with one another may provide the basis of power to teachers and others who actually implement educational processes to share in making decisions concerning what these educational processes shall be.

III. Case Studies of Workshops and Leadership

In the last two years, members of the Evaluation Staff visited almost 30 workshop sessions,[1] for each of which a verbal description and an analysis were written. Most observations detailed in this report were made by the writer. In addition to observation data, this study of MACOS seminars is based on formal and informal interviews with leaders and participants.

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[1] We observed meetings in six different school systems; the number of sessions seen in each system ranged from two to eight. Demographically, all observed systems were on the East Coast; two were suburban; one, small city; three, inner-city.

The workshops varied in size from five to fifteen participating teachers, though rarely did more than ten attend a particular session. Reflecting the femaleness of elementary school teaching, the workshops overwhelmingly were composed of women, but all had some male teachers in the group.

Two inner-city systems held monthly, all-day workshops; substitutes covered the teachers' classes. Other systems held about three two-hour meetings per month, during the school day. Still other systems held weekly, after-school meetings, amounting to about forty workshop hours per year. Teachers were not paid to attend, but did receive in-service credits that were applicable toward salary increments. In only one of the systems observed were sessions held after school hours with no compensation for teachers. These meetings, however were short and occurred at monthly intervals.

There have been three different types of workshop leaders: those who are or were on the EDC staff and who helped to develop MAN: A COURSE OF STUDY; those whose responsibilities in the school system are administrative -- such as social studies coordinators, or members of groups specifically charged with effecting changes in schools; and those who are classroom teachers --who may or may not be compensated for their additional responsibilities as leaders.

The clinical workshop data were analyzed in terms of the leader's role in the group. Using the phraseology of the Classroom Observation Form, a leader may be "idea-oriented" or "people-oriented." An idea-oriented leader would show primary concern with the material, either at a factual or conceptual level. "People-oriented" refers to a concern with participants' behavior or interpersonal relations. This typology of leadership styles is reminiscent of Bales' distinction between the "task" leader and the "social-emotional" one. The former concentrates on "getting the job done;" in the case of MACOS seminars, on the participants' mastery of course content. The latter might be more concerned with meeting teachers' basic needs for security and support and with modifying behaviors.

Classification of a leader as idea-or people-oriented is intended as a description of overall style; it does not refer to the emphasis of one particular session. All seminar programs in this sample were observed on at least two occasions. Nor are the classifications meant to be mutually exclusive: an idea leader may, on occasion, emphasize the emotional support components of his role, and other leaders' overall style may be closer to a combination of the two roles than to either one. It should be stressed, also, that neither role is inherently better or more successful[1] than the other. When the leader's style and the participants' needs are congruent, and when the leader is proficient in his approach, the seminar program is likely to be successful. Moreover, it seems that to some degree, a particular leadership style is influenced by the situation -- by the commitment, interests, and abilities of the participating teachers. Nonetheless, the leader sets a "tone" for the seminars, just as the teacher creates an atmosphere for the classroom.

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[1] "Success" involves judgments that the leader's goals are reasonable and that he achieves them, and also that the session meets at least some of the objectives of teacher education set forth by EDC.

What do these distinctions actually mean for MACOS in-service education? We will examine both orientations with cases from inner-city and suburban situations.

Idea-Orientation

How does the idea-oriented leader operate in the seminar setting? We will examine first detailed descriptions of seminars of a relatively successful leader and then of a less successful one.

The leader of the first program was a young man who was pursuing an advanced degree, had done some college-level teaching, and who had primarily administrative responsibilities in the school system. He was able to devote a great deal of time to MACOS -- preparing for meetings, visiting classrooms, etc. He was known for his enthusiasm about MACOS and his abundant energy, as reflected in an observer's comment: "He packed into a two-hour workshop the activities and materials our EDC staff would plan for two full sessions."

The leader viewed his role as that of guide and his objective as helping teachers to gain a full understanding of the course. He had a clear view of MAN: A COURSE OF STUDY and didn't hesitate to communicate it to others. Unlike some leaders who tried to establish a colleague relationship by down-playing their knowledge, he would share his insights with first year teachers. They felt that the workshops provided guidance not found in the teacher's manuals. Instead of expressing his views by lecture, however, he usually planned each session so that materials and questions led teachers to a better understanding of the course. The workshops also were a forum for debate, but this function seemed secondary to that of guidance on intellectual and pedagogical problems. Incidentally, this guidance often came from teachers because the leader encouraged them to share understandings.

The seminar group was composed of teachers from one of the select suburban school systems. It is likely that they were of high quality simply because a superior system can be more selective in its hiring. And even if they were no different from the average teacher, they perceived themselves as skilled professionals and interacted accordingly. On the positive side, this led to efficient, serious discussions; negatively, it produced the attitude that pedagogic skills had been mastered and, therefore, there was little need to talk about actual teaching techniques. As the group leader said, "Their interest is about 65% content and maybe 35% pedagogy."

This particular combination of leadership and membership combined to produce an atmosphere of serious professionalism, with a strong task orientation. Following are descriptions of two meetings of this group.

The leader began one session, designed to introduce the Netsilik unit, with an apology for lecturing. He talked from notes about the transition between the Man and Animals and Netsilik units and quoted Bruner to explain the shift from physical evolution to culture as the major determinant of change. Teachers took notes as the leader used transparencies to consider the questions: What are the "humanizing forces" which differentiate man from animals? Why study the Netsilik rather than *another culture? What is the basic strategy of the course?*

The teachers then viewed "Autumn River Camp." Afterwards, teachers asked how this film was made and whether it was a real situation or a reconstruction. One person criticized the film as failing to show modern conflicts --life is depicted harsh, but still idyllic. The leader pointed that conflict does arise in the latter part of the unit. Another teacher added that the film doesn't show dominance; that life is too cooperative. But, responded another member of the group, cooperation is a major feature of survival in this type of environment. A number of people joined in as the group talked about role definition in the Netsilik and American worlds.

"Autumn River Camp" contains one scene in which the young boy, Umiapik, stones a gull to death. The leader remarked that while he normally found an adverse teacher reaction to that scene, none was apparent in this meeting. Why include the scene? The teachers responded as follows: It's a learning situation for the boy; it brings the child into a cooperative family venture, i.e., obtaining food. It's important for children to recognize the difference between killing for pleasure and for necessity. Students should come to understand that animals WE eat are butchered, too.

The short after-school meeting ended with the leader listing material to be read for the next session.

Another session was equally idea-oriented, though less directed. The group discussed senilicide from the standpoints of the moral dilemma itself and the teaching of it in school. Teachers viewed

Sea Ice Camp I and then read Rasmussen's journal entry about Kigtak.[1] "What's your reaction to this?" the leader asked. A lively and interested discussion ensued in which a number of important points were raised:

One's reaction depends on his age; the issue won't bother children or young teachers.

It will bother any child who has grandparents; yet it is a necessary issue to raise.

The importance of the Kigtak situation is that it shows the diversity of attitudes and experiences of different groups of people.

It illuminates two different sets of ethics-- ours and theirs.

Do Eskimos have a reverence for life?

The revelant comparison is that of Americans who must decide what to do with aging parents; both economic and emotional factors enter into the decision, as they do with the Netsilik.

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[1] Kigtak is an aged woman who struggles, unaided, to keep up with the family while traveling on the Sea Ice. This story illustrates the conflicts that arise between Netsilik family members during poor hunting and bad weather when they must decide the fate of the old who become burdens and who are no longer able to contribute to the survival of the group.

The leader then asked whether these are appropriate issues for the classroom, and discussion continued:

> Senilicide should not be discussed, because students could misrepresent the lesson to their parents and cause trouble for the teacher.
>
> It is appropriate if the discussion is confined to the Netsilik.
>
> Senilicide is acceptable; teachers aren't telling students that there is a right or a wrong answer to the problem.
>
> There were no adverse community reactions to lessons on reproduction or to the Netsilik custom of wife-swapping.

Teachers then viewed the videotape of a Kigtak lesson, after which they held a rather critical discussion of the methodology employed. The meeting closed with the record describing the hardships of Netsilik life and a final flurry of comments about it.

These two sessions had clearly defined goals: to develop some major themes of the Netsilik unit and to preview course materials. And it was apparent to the observers that these idea-oriented goals had been met. Fulfillment of idea-oriented goals is easier to discern than success with people-oriented goals, since the former require no extended period of time to become operative. More important, "idea" goals are easier to achieve than are "people" goals, which often involve changing basic behaviors.

What seems to be required in the idea-oriented seminar is deep understanding of MACOS and the ability to convey these insights or to help participants to realize them. Yet such expertise may be lacking, as the following analysis of another suburban seminar program indicates.

This one, like the first, occurred in a superior school system. Unlike the first, it displayed many problems. A group of about a dozen teachers met during school hours for twenty two-hour sessions, under the direction of a young woman. She had taught the course the previous year with great success, according to classroom observations; was a demonstration teacher during a summer institute; and was presently teaching the course in a self-contained classroom. Her only compensation for leadership responsibilities was to be relieved of teaching duties one morning a week. In theory, the MAN: A COURSE OF STUDY participation was voluntary; in practice, according to the leader, teachers were 'volunteered' by their principals. The tensions of a coercive system may have added to the group's problems.

Of the six sessions observed during 1968-1969, only the last was really successful. The first observed meeting followed in general the parallel curriculum outline on natural selection. The leader asked teachers to complete some of the student worksheets on variation, previewed the slide program designed to help children understand natural selection, and examined with teachers two student booklets to anticipate which concepts the children have and which they lack when they begin natural selection. While the activities were all quite reasonable, the overall tone of the meeting was listless non-participation. Since the leader would not lecture and the teachers would not volunteer, little significant dialogue occurred. The leader's inability to involve that group of teachers, many of whom privately expressed the view that they didn't need meetings to prepare them for teaching MAN: A COURSE OF STUDY, continued throughout the year. In addition, the leader's lack of knowledge about natural selection contributed to a fruitless session.

The second session was devoted mainly to pedagogy. The leader, again following the EDC suggestion, asked teachers to analyze types of student questions and to consider alternate strategies for dealing with them. But there was no feeling of a group discussing a problem to which they wanted to know the answer. Teachers had never expressed having difficulty with student questions. It is hard to know if this meeting's problem was one of inadequate leadership, or inappropriate activity.

An EDC staff member conducted another session in which teachers previewed "The Baboon Troop". Teachers directed a number of informational questions at the visiting 'expert' but failed to respond to her questions, especially those which sought to move the conversation beyond the level of specific information. Again, the problem was that the teachers' could not be persuaded to become involved.

The aggression workshop with its package of readings, considered a great success by most leaders, was a failure here. The leader was pulling, but at least there was some talk. Again, the overall tone was listless. Two teachers who were against attending workshops said that the initial orientation to the course was essential, but they could proceed on their own. And they could use the two hours for other professional activities. But their comments don't explain why the group did not respond to the intellectual argument in this meeting.

Much more discussion occurred at the fifth session observed - it was a comparatively successful meeting. The group viewed and discussed the "Birth of a Hunter" videotape and raised a number of issues: in open discussions, the children go off on tangents--how do you keep them on the topic; there are values as well as problems when a number of children are talking at once; groups can be organized by the teacher or selected by the students themselves. Later, the group examined the suggested Teaching/Learning exercise for the Netsilik unit. One teacher expressed her fear that the activity would prove too provocative and would create a disturbance in the class. Other teachers defended the lesson.

The videotape of an EDC staff teacher teaching "Kigtak" formed a basis for a highly successful discussion in the final meeting observed. In the workshop, teachers were thoughtfully critical of the subject matter and had an opportunity to give vent to their personal reactions -- happily not in a destructive, "Let's not teach it" way. Even the major critic in the group seemed to find a way to use the story.

While teachers did consider some aspects of pedagogy (i.e., how to do the lesson in the classroom), this interested them much less than did consideration of the values involved with the subject matter. They did not criticize the teaching style in any sustained way. Clearly, they were not interested in technique.

The leader made minimal use of the EDC suggestions for a Kigtak workshop. She stressed the problem of childrens' "cool" reaction, cultural relativism, and avoidance of the moral dilemma. Her questioning was better than usual -- more appealing in tone -- because she was spontaneous and followed up teachers' responses.

The teachers in this case were least responsive to those topics which were unrelated to their interests. During the fifth and sixth sessions, however, when they were provided with opportunities for considering: controversial issues imbedded in MACOS materials (a strong concern of the majority of these particular teachers), their participation in discussions became noticeably more enthusiastic. It is interesting that the leader herself was much more responsive to the participants' comments at this time than she had been in previous sessions. It is especially noteworthy that in both this and the case cited previously, the leaders were most successful when they used an approach which was coincident with the needs and interests of the teachers involved.

People-Orientation

The leader of a workshop program involving teachers in urban, center-city school districts was quite explicit about her goals for the program. She sought to humanize some of the basic attitudes and behaviors of group members. She hoped that as a result of the workshop and course experience teachers would relate to students in new, more human ways. Course content was seen as a vehicle for developing a healthier classroom situation, for engendering basic learnings such as clear thinking and verbalization, and for promoting creativity and self-esteem. The seminars were designed to engender and support these classroom goals.

> You know, we feel very strongly here about teaching, and that you teach content second; that you teach children first. And so, what we were after, most of all, was getting teachers to have very human attitudes toward children. And this was my first objective: to in some way tell them, show them, that you can trust children to perform if you release them. Children just don't behave in these ways unless you free them. And we've tried to free teachers so that they could behave in other ways. And it was very difficult to really convince (teachers) that they were free. They didn't believe that... After you've been behaving these ways for a certain period of time, you just don't change, and the reason you don't change, you say, is "because I can't."

Her whole style evidenced concern with people -- the children in the classroom, as just described, and the teachers themselves. Important in her following comments are words like "faith" and "confidence."

> We've got to have faith in teachers. Because it's just like I said a moment ago, if we expect little, we get little, so that we, throughout our experience here, we've tried to maintain a high confidence in teachers. High hopes. And it's important that you do trust teachers to do these kinds of things, and they will. We're beginning to see evidence....

This leader was a full-time member of her district's "Innovation Team". She had responsibilities besides MAN: A COURSE OF STUDY but was released from classroom duties. She had the freedom and time to visit the classes of workshop teachers to teach demonstration lessons and offer other assistance. Moreover, her position on the team gave her a small measure of authority, though not in the negative sense of supervisor or evaluator. The group met monthly, all-day, with substitutes covering teachers' classes. The following description of one session shows how she sought to implement her goals.

The workshop was planned as a demonstration lesson to show what can be done with the MAN AND ANIMALS curriculum in a "live" situation, to show the teachers how to generate real discussion of the issues, and most importantly, to prove to them that they had no reason to fear a relaxed, informal child-centered classroom.

Thirty-three fifth grade students came for the day-long meeting. The leader and the children sat informally on the floor; the rest of the teachers were invited to pull their chairs up to the students and to participate, but the majority did neither.

Suggestions in the teacher's manual for introducing students to the baboon troop members formed the basis for the morning lesson. The leader asked the children to look at a baboon slide, to describe what they saw and to raise any questions they had. The students were ill at ease, and their answers were single words or short answers. Gradually the students began to loosen up.

The approach during this first half hour was neither discussion nor question-answer oriented. Few ideas were developed. There was no attempt to evaluate the significance of any of the remarks or questions. It was, rather, an attempt to get the children to verbalize any and all comments about the material.

A very exciting discussion did develop later from students' comments on a mother-infant slide. The children began to talk about innate behavior. They applied this concept to the situation shown on the slide, considering those behaviors with which a baboon is born. They then turned to innate human behaviors. One boy said that humans innately know to suck their thumb; the class corrected him by generalizing about sucking. They considered the importance of these behaviors to survival. Throughout this discussion (about fifteen minutes) the children were highly excited. They talked to each other, to the leader, and even moved--physically--closer to her. About three quarters of the student group participated.

The students took a break, during which they did some reading in "What is a Baboon?". Following this, they worked for about 20 minutes on various baboon activities. One group of five reexamined, through individual viewers, the slides just shown and wrote scripts for the slide program. Other groups discussed and successfully answered: "Man is similar to baboons...," "Man is different from baboons...," and "What structures help the baboon in his environment?" During the group work, the teachers at whom the workshop was directed did not budge from their seats --even after being encouraged to do so. The children, on the other hand, were working enthusiastically within their groups.

Afterwards, the children spent a brief period pooling their ideas and checking those items which most of the class agreed to be true. Again they became very excited.

The afternoon session, which lasted an hour and a half, was devoted to enactive projects related --sometimes tenuously--to the baboons, and a few chose unrelated activities. These children worked independently, completely engrossed in their work.

A number of interesting aspects about both teachers and students emerged during the afternoon. First of all, given a variety of interesting materials and a lack of pressure, the students engaged in educational experiences. No child chose to do nothing. Second, the leader had tried to force participation of the five traditional teachers by putting them in charge of the afternoon session. They barely responded to the challenge. Third, these teachers failed to understand the teacher role of resource, aiding children when they ask but leaving them free to work where their imaginations take them.

One example: Mrs. V--- was particularly demonstrative. "No scribble-scrabble. I'm in charge here, and I want you to make something!" Mrs. V--- later left her group, and while she was gone another teacher told the children to do whatever they wanted. Mrs. V--- returned, saw the "scribble-scrabble," and complained of the waste of paint and time. The children weren't, according to her, doing anything. "See what happens when they're left alone."

In this session, which employed the most innovative strategy observed in a workshop, the leader presented her philosophy of education through an actual demonstration of it. She created a model of student-centered, interactive social studies education. Ideally it was to have been a participatory model, which would engage the teachers. An indication of the leader's attitude and relation toward the workshop teachers was her willingness to put herself on the line; to run the risk that the demonstration would have shown problems and failures in her approach.

A short description of the initial MACOS workshop conducted by this leader should further clarify the strengths and weaknesses of her style. The leader's 45 minute introduction to MACOS was decidedly strained. While the teachers dutifully took notes, she talked about the origins, themes, and values of the course. She cited as a major value of the course the development of a notion of the unity of mankind. Teachers then listened to a tape recording of Irven DeVore, which failed to elicit questions for discussion. Afterwards teachers viewed the filmstrip, "Looking at Animals," with two questions in mind: what questions would you ask the class? What would the students ask? There was moderate involvement in the ensuing discussion.

In contrast, the rest of the morning was highly successful. The teachers broke up into small groups to discuss and list answers to the following statements. "Man is different from animals because...." "Man is similar to animals because...." The teachers' response was excellent, with animated group discussions lasting longer than planned.

The general discussion based on these group lists was equally lively. Teachers expressed enthusiasm about discussion methods, attending to process, and having children learn precise use of language as a by-product of discussion. They suggested individual research on questions that the class can't agree on, perhaps with each child responsible for a different animal. They were concerned that even incorrect answers be respected to give youngsters confidence in their opinions and courage to speak in class. They spoke about the problem of how to keep discussion from degenerating into squabbles over details, and how to get students to respect the generalization when they realize the exceptions. How do you end a discussion which is collapsing? When is it healthy for students to be confused? Teachers agreed that they wanted their class lessons to be like the workshop session-- a good, noisy discussion, not a traditional, "neat" lesson.

The afternoon session was short and devoted primarily to administrative tasks.

Examining the components of this workshop session in relation to the leader's overall reaction, we can see that she elicited the least response when she used a more directive approach, as in her introductory "lecture." She was better able to meet her objectives of overcoming the teachers' initial fear, reserve and hostility by approaching the material in a less formal way through small group work and general discussions. This approach allowed the teachers greater opportunity to discuss topics more closely related to their own concerns, their classroom experience and interactions.

Evaluating the success of any one session can be difficult. In the workshop involving small group work, success was immediately discernible in the teachers' reactions. In the teaching demonstration workshop, however, the leader was disturbed that none of the traditionalists indicated that they felt differently about pedagogy. But the goal for this meeting (promoting basic changes in teaching style) was terribly difficult, and it would be unrealistic to expect immediate evidence of change. The value of these sorts of workshop experience cannot be assessed as a separate entity; they are part of a slow process of teacher re-education. On the basis of early and late classroom observations in that system, it seems that some of the teachers in the workshop did eventually assimilate the new approaches to children and learning. Certainly, the nature of the curriculum played a part in creating behavioral changes (as the leader herself observed), but the workshop program, with its consistent reinforcement of a new methodology, appears to have been necessary.

> Teachers have really had a new look at kids, because in the nature of this material, if you listen at all to children, you come out with a brand-new respect

> for what they have to say. And that is the area I think that we've succeeded in most....
>
> There were teachers that we thought were just hopeless cases, and we're beginning to see a few changes. Now, they may not be far-reaching changes, and they may not be the way that they operate their classrooms every single day, but I have seen changes, and I've seen what it's done to the teachers. They are, I think, beginning to see that they can comfortably change. But they're not going to change all at once.

Examination of the frequently observed program of a second people-oriented leader illustrates a possible seminar "life cycle." This MACOS program was held in a small city (population 90,000) with a rather traditional school system. The workshop itself consisted of two male and three female teachers from different schools and the workshop leader (a woman in her middle twenties). At the beginning of the school year, the teachers felt ambivalent toward the program. Most were torn between using MACOS and continuing the usual program in history and geography, and they compromised by doing both.

The leader began the workshop sessions with an idea-orientation, stressing the overriding concepts of the course. It was her explicit intention not to get involved in the routine daily problems that the teachers faced with the materials. The teachers, however, wanted to discuss specific content and lessons. Faced with a situation of conflicting expectations, the workshop leader began to feel as if she were failing.

She realized that the teachers' concerns were legitimate ones, that they were new to the course and had to teach it, and they were seriously insecure. She also sensed their willingness to talk openly about the problems they were having. After three unsuccessful workshops, and upon considerable analysis of her role and of the "personality" of the group, she changed her approach and it was as a result of this change that she realized a number of successful workshops.

The direction which she took was a personal one: she began the fourth workshop with an expression of her own problems with MACOS. This changed the workshop relationship from that of teacher and taught to that of colleagues sharing experiences -- an important shift in focus. She also encouraged the teachers to speak about problems specific to them and offer suggestions for others' problems. The group and leader acknowledged that the course contained material difficult, new, and even threatening to them in their roles as teachers. Out of these specifics the group began to talk about more general concepts approaching the thematic concerns the leader had been striving vainly to promote from the beginning, for example, considerations about the nature of work and play and of why children lose interest in learning. In essence, what she did was to use the teachers' concrete classroom experiences, their questions about specific lesson plans, etc., as entry points to broader perspectives.

An additional stimulus to the group came toward the end of the year when the city social studies coordinator asked the group to evaluate the program and recommend to the school committee whether the course should be discontinued, continued, or expanded. It was in response to this request that a genuinely cohesive group formed. Over the course of the year the members had come to know each other fairly well. (The group met for two hour sessions twice a month.) They also had the feeling from the very start that they were participating in a special project.

Departures from the regular curriculum in this school system were rare and therefore prestige adhered to those using "experimental" materials. Feeling as they did about their involvement in the MACOS program, and sensing that there might be considerable resistance to an expansion of the program, the group became a united front. They discussed the materials with the social studies coordinator, pointing out the advantages of a packaged, multi-media program and the kinds of changes they had noticed taking place in their classrooms in both student behavior and in their own teaching styles. This review of MACOS reinforced their more positive attitudes toward the course, and some of the members who had expressed ambivalence at the beginning of the school year reached a surprising new position in which they advocated replacing the regular fifth grade social studies course with EDC materials.

It is important to point out that the nature of their conclusions was not the basis for judging the later workshops successful. Rather, it was the amount of open communication and support shared between workshop leader and teachers and between teachers themselves. Indeed, this seminar program went a long way to fulfill the EDC goals of the creation of a professional colleague group out of the seminar experience.

But in spite of these successes there were serious problems. One was the lack of mastery of course content on the part of both the teachers and the workshop leader. Misinformation was shared within the group and no doubt carried from the workshop sessions to the classroom. This was particularly true during discussions of innate and learned behavior and natural selection and adaptation. A lesser problem was the reinforcement of negative attitudes despite the leader's positive ones. Reproduction, for example, was considered an inappropriate topic for the classroom, though the leader found it acceptable.

The failings of this seminar program may be understood in light of the leaders' orientation. While focusing on the more immediate and practical concerns of the teachers, the leader neglected to provide the teachers with an adequate coverage of the ideas and information of the course. The teachers' immediate needs became the most important concern of this particular leader, for it was only after she responded to the group's specific needs that the participants became totally involved in the program. Here again, as in each of the case studies cited above, seminar success stemmed from the confluence of leadership style and membership need. The experience of this particular seminar suggests, however, that seminar leadership ideally should combine both "idea" and "people" orientations, because the goals of in-service education have both cognitive and emotional components.

IV. Evaluation by Workshop Leaders

The evaluation staff asked New England area workshop leaders to meet with them at the end of the 1968-1969 school year to assess their experinces. The group consisted of five young female leaders, all of whom had full teaching responsibilities. Another female participant was a curriculum coordinator; the other was a male workshop leader, whose non-MACOS responsibilities were administration, not teaching. Since four of the leaders were not observed during their workshop sessions, we do not know the degree to which they were successful in the approach they took. From their comments, however, we may suppose that this group represents a reasonable range of school situations, personal attitudes toward the process of teacher education, leadership styles and competencies. Although the actual meeting was a fairly unstructured conversation, the comments of leaders are most easily summarized as responses to a few general questions.

1. Did the summer institute experience prepare you for teaching MACOS? Leaders disagreed about the value of this institute as preparation for teaching the course. One felt that the brief course survey provided a coherent framework for subsequent teaching, that they understood the themes of the course and how they fitted together.

> I could see a perspective on the course that other teachers doing it for the first time couldn't. They really didn't see how the Eskimo material was going to connect to the animal material, for instance, and I could, as a result of the summer workshop.

Others were less certain of the value of the institute; one leader thought that the summer experience created a great deal of enthusiasm for the course in her, but that it was too abbreviated to be substantively useful.

Some members of the group had had the experience of teaching MACOS to children the year prior to assuming leadership responsibilities, and while this was thought to be desirable, the realities of wide-scale dissemination make it likely that many new seminar leaders will, themselves, be new teachers of the course.

2. Did the summer institute prepare you to lead a workshop?

The consensus of the group was that their institute experience did not really prepare them for running a workshop. One reason for this failure was that workshops are different from institutes in the degree of commitment of members and the amount of time spent in each group. It was felt that leaders must recognize this difference in order to plan effective workshop sessions.

> I think, maybe, that was a discouraging point to me at the beginning of the year. We had had this institute in the summer, at which the kinds of questions which are brought up in the parallel curriculum were avidly fought out. But in the workshop, we had lots of teachers who weren't interested.
>
> What you say is true -- the issues which we discussed in our first experience with this material -- you know, knowing that we were going to have to go back and in addition to teaching the course, run workshops -- are quite different from the things that the people want to discuss two days before they're going to have to meet thirty kids with these materials. And so you have to really approach the workshop differently, I think, at the beginning.

A number of the leaders described their lack of experience in working with adults -- "It's so different teaching it to teachers rather than teaching it in the classroom!" "It's much easier to explain it to the kids." They asked, therefore, for explicit training for leadership of seminar groups. Some suggested a group dynamics approach; others suggested videotaping and analysis of sessions. There was disagreement about the value of role playing the institute leader. One member of the group disagreed with the call for explicit leadership training. Such training, he felt, was impossible.

> One should, however, make the institute a model for the way workshops should be run. If institute personnel believe that leaders should behave in a particular way with teachers, the institute staff should act similarly with the leaders.

3. Should the workshop leader be a classroom teacher?

The arguments pro and con were made on theoretical and practical grounds. Leaders who felt that the workshop leader should be a classroom teacher noted that such a situation increases the informality of the seminar group and ameliorates teachers' fears of being evaluated in the meetings by a superior. It was felt that they would more readily admit problems and lack of knowledge to a peer. Further, if the leader visited teachers' classes, the observation would be seen more as helpful support than critical evaluation. Teaching the course while one is conducting a workshop keeps the leader attuned to classroom concerns: "It's very, very easy to lose touch with children and their responses and their psyches if you're not with them every day. And it's awfully easy to get hung up on adult concerns and your own administrative concerns."

On the negative side, time constraints were frequently cited. The leader who has a full teaching load has little time to prepare for seminar sessions and still less time and flexibility to visit classrooms. On a more abstract level, some people felt that an important qualification for seminar leadership is general social studies expertise, that the leader should be someone who is respected for his broader knowledge of curricular issues. People such as the system's curriculum specialist, or a department chairman, or another type of administrator were cited. One member of the group added that the higher status of such a person makes the leadership role easier.

4. What problems do you see in the workshop program?

Some leaders expressed their disappointment at the disparity between their expectations for the workshop sessions and those of the teachers. The leaders hoped to engage the group in critical appraisal of the curriculum, to discuss such questions as, "Why would you want to teach this?" and "What goal would you have for this?" Teachers, they found, simply wanted to preview the material and learn how to use it; the teachers were not interested at first in pursuing philosophical and abstract pedagogical issues.

The problem of how to deal with those teachers who are resistent to the course was also discussed. One of the leaders felt that it is important to change negative attitudes and that the pressure of positive group attitudes is the most important factor in accomplishing this.

Other attitudinal problems mentioned were teachers' passivity, an unwillingness to become involved in the topic under discussion. Also, some people felt that teachers were resentful of after-school meetings.

The most effective seminar size was discussed, with some agreement that both large and small groups were troublesome. A large group is not conducive to discussion; a small one, especially if the members are from one school, may lack a range of views.

5. Has the workshop program been successful?

Leaders expressed the view that, despite complaints, teachers strongly wanted the workshop program. The workshop provided a measure of security for teachers who are beginning to use a radically new curriculum, and in some instances became an exciting forum for discussing ideas related to the course. As with students, it was felt that voluntary involvement on the part of the adults increases the program's success. As the leaders themselves commented:

> ...We asked teachers to evaluate the workshop. A significant question was, "Do you think we should require workshops of this type for any new teachers next year?" And I think when they all indicate "Yes" to that, it means that they must have gotten something that they felt was worthwhile out of it.
>
> ...Well, the funniest thing happened. They complained and complained, and then when we asked the teachers to evaluate the workshop, they said there should be workshops next year for the new teachers, because they got so much out of them.

Interviewer: It was a chance for them to complain!

> ...That's true, though. Complaining is just a general syndrome that they had to experience: They wouldn't have been happy without being able to complain, and yet, left to their own devices, they panic. Because when we said, "Well, would you like to not have the workshops for you people at all?" they said, "Oh, no! We want to come; we want to come."
>
> ...Our teachers wanted the workshop. We were having three a month, and we at one point decided that maybe we could cut down; they wanted to meet every week. They felt that this was necessary. However, there were times when the leader was doing all the talking; they were very unresponsive to some very good questions. Other times there were just tremendous workshops.
>
> I think on the whole, the workshop was very good because the teachers wanted the materials. I was the only person in the school using them last year, and they were excited about some of the things that were going on in my classroom. When I approached them the first of the year and told them that there was a possibility that they could use them, they got very excited. It was voluntary, and because it was they feel free, too, to talk about the things that they didn't like in the course.

6. Were the Suggestions in the Parallel Curriculum Useful?

The original teacher seminars, or Parallel Curriculum, used during the 1968-1969 school year were several in number and covered in non-sequential fashion some of the basic materials and ideas of the course. The suggestions were mainly in the form of guiding questions and accompanying workshop activities through which to explore the questions. A general bibliography for the year was provided, but seldom were specific readings suggested for individual seminars. These seminar suggestions were experimental in nature, an outgrowth of a need expressed by leaders and shared by the Director of Teacher Education, that some guidelines for workahops would help leaders to organize their sessions and to focus on organizing questions EDC knew to be critical to teaching the materials. Activities suggested ranged from previewing student films to working through the materials dealing with a concept in the course, such as Natural Selection; or a topic cutting across the curriculum, such as agression. The suggestions were fairly brief, and not thoroughly developed as were the teacher guides for classroom sessions. A main thrust of suggested questions was to broaden the perspective of teachers beyond specific lessons of the course. In operation, this trial version of workshop suggestions in the Parallel Curriculum was found useful as a guide, but none of the workshop leaders followed it closely. The general concensus was that at the outset of the school year teachers were primarily interested in previewing these materials which they would be using in their classrooms in the immediate future and that the broader perspective of some of the topics suggested in the Parallel

Curriculum were not especially appropriate at that time. They therefore attempted to structure their workshops to meet the special needs of their groups:

> ...We just planned our own as the need arose...
>
> ...what we ended up doing was taking the workshops in sequence with the course. In other words, trying to keep a little bit ahead of what they would be doing, because this is what they wanted to know. They weren't interested in the Eskimos in [illegible] October or November because they were too bogged down with problems of Baboons and salmon and herring gulls at that point.
>
> ...it wasn't until we got toward the middle of the workshop experience -- maybe the last of the Man and Animals workshops and into the Netsilik -- that we began to orient it much more toward issues and get away from the lesson plans...

It was only after the teachers had become familiar with the teacher manuals and classroom materials that they demonstrated a willingness and interest in looking at the course from broader perspectives. As one leader expressed it:

> So many teachers wanted to try it first and then come back and talk it over..."Don't ask for alternatives. Let me try it this way, and give me a chance to preview the material. You help me preview it, but don't have me try to figure out all the philosophy behind it right now..."
>
> ...One girl said to me about four weeks ago near the end of the school year, "Now I'm ready to talk about why teach this course as opposed to some other standard curriculum that we might find." When we raised it at the beginning of the year, they really had nothing to contribute. It was just a question of "Why not?"

In terms of specific seminars, the most successful sessions were on aggression, senilicide, and hunting games; all actively involved the teachers in either discussion or action, and two were concerned with controversial topics of a scope considerably beyond materials specific to the course.

V. Conclusion

In addition to analyzing seminar programs in terms of the leader's orientation, we correlated the success of individual sessions against sex of leader, professional status of leader, length of session, and location of school system. No significant patterns were found. In a negative way, we confirmed what other researchers have found and what educators intuitively know: no single attribute determines the effectiveness of a group (whether children or adults); rather it is an interplay of a host of complex factors. There are no simple formulas for human interaction.

Although workshop leaders as a whole did not follow closely the suggestions of the Parallel Curriculum, on the basis of the data we have obtained over the course of the past year, it is clear that in many ways the goals of the program were implemented. Workshop participants were exposed to an abundance of information requisite for an adequate understanding of the course content. The seminar also provided them with an opportunity to preview the course materials. Participants engaged in discussions of the newer pedagogy presented in the course and were given support for their endeavors in these new directions. And, for some groups, the seminars provided participants, heretofore working in isolation, with a new sense of cohesiveness and professional identity.

Observations of the individual seminar groups indicate, however, that no one seminar realized all of these goals. Depending on the interests of the leader and those of the participants, emphasis tended to shift in one direction, often resulting in the neglect of other areas.

Thus in one seminar group (the last case analyzed), because the interests of both the leader and the participants did not lay strongly in the direction of course content, this aspect of the course was neglected, leaving the teachers with a rather meager understanding of the course concepts. In the first in-service group discussed above, however, course content was of prime concern and given greatest emphasis whereas pedagogy was not intensively explored. For the seminar program to be most successful, it seems that the leader must strive for a balanced program -- one that is responsive to the interests of the group but that also covers the total range of conceptual and pedagogical issues of the course.

SECTION VII

INTERVIEWS WITH TEACHERS

INTERVIEWS WITH TEACHERS

During the large-scale field testing of MACOS in 1967-68, teachers[1] in one suburban town and in two center cities were interviewed, usually three times, during their teaching of the course. Early in the year, toward the middle, and at the end of the year, 14 teachers spoke with evaluation staff members about their response to the units, experiences in using the materials, and general views of social studies and education. In addition, three center-city workshop leaders were interviewed.

We analyzed teachers' responses in the light of three considerations:

1. The special characteristics of each school system, as revealed in the interviews.
2. The style and attitudes of individual teachers.
3. The common input of MACOS.

This section of the report explores the interrelations of these three dimensions. In general, it concludes that where use of the course differs between the center city and the suburbs, these differences are due mainly to differences in teacher expectations of youngsters, their concerns as teachers, and their interpretation of the teacher role.

In the Suburb

From these interviews, it became apparent that many teachers came away from the course with a new concept of skills as developed in the fifth grade classroom. The most frequently mentioned skills which teachers in a suburban setting found to be emphasized in MACOS were psycho-social and intellectual in nature and included first, active listening, communicating, and sharing in group exchanges; and second, observing, abstracting, and contrasting. The development of both sets of skills was commonly attributed to the major mode of working in MACOS: oral expression, either whole-class or small group. Teachers noted that there was little or no emphasis on written work or projects done individually in isolation from other classmates.

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[1] The interviewed teachers participated in the workshop-seminars and had classes under observation, with students interviewed as part of the evaluation procedure.

As they summarized the intellectual strengths of the course, they stressed that the materials and activities encouraged student generation of ideas and the use of the source data to support these ideas. As noted in the section following, one center city stood in opposition to this view and saw the course as promoting the teacher-centered classroom, since its lesson plans and suggestions for questions emanated from the teacher. In other words, the teacher mediated all use of the course. In this suburb, where several teachers were interviewed and observed over a year's time, a very different view of the teachers' guides emerged from the interviews. Why this difference in perspective about a common input? It seemed to derive from a common "gestalt" about teaching that these suburban teachers shared as a result of their membership in that particular school system: they saw themselves as "setting up" a situation, as facilitators of process, and they spoke of the need to get out of the way of youngsters in discussion. They were preparers of the stage.

> I think that some of the activities are designed so that they don't need so much direction from me, and

> I'm delighted about that...But it seems that I'm still talking a lot. Not that I'm telling them so many things, but I'm preparing them to observe something...They're still getting the most information from booklets and from films and from other things than from me. So in that sense, it's different.
>
> I sit in the back. If (discussion) becomes too loud or I feel a kid is really being jumped on, I step in...

One teacher saw the course as a shift from the didactic mode (written language skills especially) to the interpersonal mode (communications, relationships of children to others in the classroom). She viewed the course as "primarily verbal," which is certainly supported in the classroom observations, student interviews, and checklist results, and by perusal of the teacher manuals. She specifically mentioned that this stress on verbal communication had much to do with the way children learned :

> In terms of communicating with each other, I've found that they will talk with each other about the things rather than come back to me. If we're sitting in a circle and I start a discussion or I've planted a seed elsewhere to start the discussion, they want to discuss with each other.

This teacher viewed her class's open, articulate behavior as having some of the same competitive components that more traditional testing and written materials might elicit.

> You learn who the strong ones are, verbally, and who has lots of ideas, and you notice the kid who always repeats what someone else says. He doesn't have anything to say himself, but he has to say something, just to protect himself.

The "strong ones" in discussion are not necessarily the high achievers in more traditional, memory-centered learning. Another teacher said:

> My class is the type that discusses everything... They wind up listening to each other across the

> table. They love to discuss it all together, they really do. Because there are a lot of kids in there who have very limited abilities who...really went to town on some of the discussions.

Again, the skills of communication were stressed.

> They know how to talk, these kids coming up. They just don't know how to listen...I think these kids, their discussion techniques have definitely improved... these kids talk to each other and they respond to each other and by-pass the teacher, you know. So it isn't a kind of orchestra kind of situation.

> I've always done (discussion), but I think this kind of material lends itself more easily than other kinds of things...it provides an awful lot of sharing of ideas...it seems to me they enjoyed this, because they are allowed to speak and that other kids will listen and are interested to listen.

Awareness of others, contact with others in the classroom on an idea level, seem to be characteristics that distinguish an EDC classroom from a non-EDC classroom. One of the classroom observers commented that she found the "amount of student interest" dimension of the observation scale almost impossible to use in the non-EDC class, because she had no way of judging student interest. Students were passively arrayed in rows, making little movement and giving no clues to what they were really thinking or feeling about the materials they were studying. She wondered how teachers in such classrooms ever get honest feedback about students' reactions to materials. The attention and interest of youngsters in MACOS classes, on the other hand, seemed much more obvious, judgeable, visible -- the activities and lessons were planned to elicit student response. A teacher recognized this same component of her MACOS class:

> There has been active listening on the parts of all the kids. Much less losing contact with what's going on. Especially with listening to other kids. (This is partly due to) the kind of discussion that I am

> trying to have...the structure of it, questions directly relating to things they've seen and read...

This teacher commented that the stress on discussion had, to her mind, actually changed her style of teaching:

> ...they don't have to do as much written work, so they can get more involved in the discussions, because they're not afraid of what comes next -- which I've been the cause of frequently, because I was oriented to writing things down at the end.

Another teacher saw opportunity for expression of personal feelings in the role-playing of baboon troop members.

> Three or four boys chose the sub-adult, the male who fights his way through the female...and tries to get into the hierarchy. The kids who chose to be sub-adult were...my boys who were growing into manhood, you can spot them, they're a little more mature. I had an interesting experience. I was a female baboon in the role play, and we did this thing and we saw a movie. And when we went back to play, I didn't play, because my knees were too sore. And (a boy) came over to me and said, "You've got to play." And I said, "Why?" and he said, "Because I want to fight you"...he said it in humor, but I honestly think he thought about it.

It is especially worthy of note that the child felt free, within the role-playing situation, to express a feeling of assertiveness against the teacher, and that she could respond to it in a natural way without judgment on his frankness and with an understanding that the role-play gave her youngsters a legitimate chance to express some very deep feelings rising out of their personal states.

With rare exceptions, teachers everywhere expressed tremendous enthusiasm for the films of the course. This group of suburban teachers commented mainly along two dimensions: the motivating power of films, both to elicit and maintain student interest, and their unparalleled usefulness in conveying information. An interesting comment was the following:

> (Have you learned anything new about the way kids operated, the way they learn?)
>
> I'm constantly impressed by how much they learn from audio-visual material. But that's because I've taught a long time and I haven't always had the opportunity to use this kind of audio-visual material...Watching the movie, "Fishing at the Stone Weir," they were able to absorb an infinite amount of details that I'm -- well, I saw it a few times, but they really absorb an enormous amount.
>
> (During MACOS, have they changed in the way they view films?)
>
> Oh, yes. I think that's very definitely so. They've become much more sophisticated about films. I was able to understand this, because one time another teacher presented a film to them. They saw it. There was no discussion, and that was the end of it. There seemed to be no feedback about it at all. When they saw "Fishing at the Stone Weir," they knew there was a lot of information to be learned from this film, and they have expressed this feeling to me, and we've talked about the fact that when we view a film there are certain things that you absorb from it. And we also talked about the question, if you've observed a film, has the film served its purpose? It's not just a pleasure-viewing type of activity, although it is pleasurable in the way it's done. I think when we first saw the first film, "Crossing the Tundra," I mentioned to them that there wouldn't be any sound, and they expressed some feeling about, "Well, how are we going to learn?" And then we got into a discussion about films and their importance. Then they saw it, and it was marvelous. I think they've gained a great deal of sophistication about movies.

A separate section of this report deals specifically with the films and other media, and comprehensive attention to this exceptional feature is given therein.

Teachers saw the content of the course as intrinsically interesting to fifth graders. One put it this way:

> They have a natural curiosity about animals and a natural curiosity about themselves, so that the material itself is more closely allied with their interests.

> Maybe that's what I meant before when I said that... the study of a country is an adult-oriented approach. This seems to be a much more natural outgrowth of their feelings.

The above teacher viewed the more traditional fifth grade survey of a country as a topic that is an outgrowth of adult interests, not an intrinsically interesting study for the child. Because MACOS content relates to enduring and critical issues of human development and behavior, youngsters develop a relevant competency; they have knowledge and budding thoughts about some basic human events:

> ...there have been times when they have related to somebody's life .... last night, when they saw the television program, "How Life Began," they were able to relate material about the herring gull and the salmon and they said, "I kept telling my father about it and I kept telling my brother about it until they said, 'Keep quiet, I want to watch the program,' but we knew so much." I'm sure that was a wonderful feeling for them, that they had a great understanding about this subject.

However, there were teachers who were critical of the lack of choice of learning activity.[1] The same teacher who praised the quality of the materials, the opportunity for sharing and verbal exchanges, also noted the lack of individualized activities: "If a kid isn't interested, what do you do?" The course does operate on a consensual basis in terms of its classroom operations. This teacher also felt that the emphasis on verbal responsiveness resulted in a paucity of skills development of a more traditional kind -- use of resource material outside the givens of the course, and written exercises.

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[1] The section on classroom observations discusses differences in teacher attitudes about independent versus group work as reflections of basic teacher-orientation. "Idea-oriented" teachers seek more individual project involvement; "people-oriented" teachers are less critical of group work emphasis.

When these teachers spoke about their views of social studies and their previous experiences, they sometimes expressed a concern that traditional skills were neglected in MACOS:

> I've been used to teaching social studies where the things you teach are outlining; you teach the students to do reports, to use the different kinds of reference material. I don't know when the children are going to learn to use the reference books...They learn to skim and scan in social studies. This will have to be made up again in another subject....

This teacher was consistent in her positive emphasis on fundamental skills development in fifth graders. She summarized their enthusiastic response to categorizing and classifying exercises:

> I've found that fifth grade is a wonderful time to expose children to the atlas. They can find more wonderful things in the atlas...Right now, they're excited about classifying animals. I don't know whether they're excited about classifying animals or the game we play classifying them.

As she reflected about her own schooling, she remembered social studies as dull, revealing at the same time:

> I never remember learning anything in elementary school. We did study the Eskimos, but I don't remember anything about them. They built igloos. I didn't have any enthusiasm for it, I suppose. But math, I learned a tremendous amount of arithmetic in elementary school. You can measure math. You can't measure social studies.
>
> I must have built something up inside of me, because I didn't really want to teach social studies...I've been avoiding it for eight years.

We surmise, then, that more quantitative, measurable outcomes of education have been a habitual and comfortable expectation of this teacher. How, then, did she feel as the year progressed? As she finished the first half of the course, her response was enthusiastic:

"I've had a ball!" She was still somewhat disturbed that the course didn't emphasize written language skills; at the same time, she saw the biggest gain as:

> Communications. I think the kids have something to talk to you about, and I think this is a sort of foundation.

A new experience in shared discourse was developing for her.

Another teacher put her skills concerns in a more positive light:

> You can't be a social studies teacher without being a reading teacher. What's real social studies? If you were to ask me what social studies is, I would say -- profoundly -- social studies is people, and everything that involves people.

It was clear from the interview that this teacher was caught up with issues of human behavior, cared deeply about motivating her children to consider themselves, their behaviors, their meaning as human beings. For her, the course became a vehicle to explore man's nature.

What was apparent in the suburban teacher interviews was a generally high level of understanding and usage of MACOS classroom techniques prior to the teaching of the course. These teachers already saw themselves in ways that were congruent with the suggestions in the teacher guides. They had used discussion, group work, and role play quite extensively before coming to this course. MACOS provided these teachers with material they unanimously viewed as excellent and provocative, along with a teacher workshop that operated as a forum, or proving ground, for classroom materials and review of their own professional roles. As one summarized:

> It's nice to have materials at your fingertips...so you can put your time and your talent into teaching.

In the Center City

In the first city under consideration, MACOS was not an isolated innovation, but part of a carefully developed program of change, supported and guided in part by the EDC Pilot Communities Program working through the system's Innovation Team. Innovation in the group of schools using MACOS was supported by the system, and a climate of openness to change already existed to a good degree. The workshop leader, a teacher who served a group of schools as an innovation leader, was concerned primarily with changing climates in elementary classrooms and in opening up new role possibilities for teachers. She used MACOS as a vehicle for promoting new views of teaching and learning and for supporting classrooms in which youngsters were given more responsibilities and more respect.

Teachers felt all around them a challenge of innovation that worked to serve the purposes of MACOS. One woman mentioned the generally innovative setting into which MACOS was put:

> ...because I do teach in the model school area, I've had a chance to learn and become acquainted with many new innovations which change education for the children I teach...

The section of this report dealing with in-service education notes that this environment was encouraging to an exciting trial of the course.

In terms of changes in classroom attitudes and behaviors that might be attributed to MACOS, one teacher in the spring of the year stressed students' growing self-confidence in expressing ideas:

> They have got more confidence in themselves. That I can do something; there is something I can do. Maybe I can't read, but here I can act. Here I can get into a discussion. I have something to give,

> and nobody is going to laugh at me. Whatever I say is right, and somebody will respect my opinion.

She found the variety and diversity of materials and activities valuable because they drew in all levels of children, "no matter what their potential or reading level." The non-readers learned a lot from the visuals. Her reaction to the written materials was similar to that of many center city teachers:

> I think the idea of the children being able to keep all the booklets, to bring them home and share them with others, is one of the things that made the unit so fascinating to them. The parents were enjoying reading the books as they kept them. It was something they really wanted.[1]

It must be noted, however, that this teacher felt strongly that the films carried the Netsilik unit for her class.

> If they ever have to cut down, they can cut down on the booklets, and just let it be, maybe, or the teacher's background.

Working with films was mentioned as a way of developing skills of observation:

> I think it stimulates them to look and find out more things for themselves without somebody telling them. They are always having things told to them so much. And the last time with the sound, we cut it off the first time, and then the second time we showed it with the sound...It put them to observing many more things when they didn't have sound.

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[1] While center city systems could not, from economic constraints, give purchased MACOS booklets to youngsters as Part of ordinary usage, the insights of this teacher, and the many mentions of the booklets by center city youngsters certainly point to a new way of using these elementary reading materials -- perhaps a few sets for "take-home" copies, even though these would need to be returned. Or perhaps the better suggestion is that outside money should be sought to provide booklets for center city youngsters to own, in a "build-a-library" program.

A group of teachers at another school in this city used the materials in an interesting way to suit the individual child:

> ...those who wanted to read the book would do research. Those who wanted to work on the art parts would do some art, and those, after seeing the film, who wanted to write about what they had seen, would put it in writing. Some children wrote poems or creative stories, and then some would just talk, having group discussion.
>
> ...maybe the varying from one thing to another was one of the reasons we could say that it was successful.

Special problems of interpretation and use of the materials, however, did appear. For example, one teacher stated the following process-oriented goals for his class early in the year:

> I want the kids to be able to communicate, written and orally...reading is a real problem, to get the kids to want to read, that's a struggle. There's none of the middle-class love of reading...then I think that the children should be taught to think...to question, to reason...
>
> I like a classroom that's free, where kids are enjoying themselves....

His goals with reference to course content were much less definitive:

> What it is I want kids to learn...I haven't thought about it.

He would have liked, however, to focus more solely on the visual materials: "Just the film seems to teach them fantastic amounts of materials." Following through on his process approach, he believed at the beginning of the year that it was possible to organize the management of the MACOS classroom on the basis of a student-centered situation, and mentioned this in the context of using the innate and learned behavior booklets in small groups, with student discussion leaders:

> That would be the extent of the discussion of that booklet...Whatever they learn from that booklet will be because of themselves...See, I'm not interested in the end. I'm just interested in the means of their learning. I couldn't care less if they even know what an urge is, really.

By the end of the year, however, this teacher was somewhat disappointed in MACOS, for the following reason:

> I think it wants to be a student-oriented curriculum. And I'm convinced it is a teacher-directed curriculum... just look at your teacher's guide, and you'll see: tell the students this, explain to the students that... The main source of information is from the teacher, and that means the teacher's got to be talking and the kids have to be listening... (there are) a lot of lessons where the teacher is doing most of the work and the organizing.

This young man was not hopeful about changing the teaching styles of traditional teachers, and was further discouraged by this program because he felt it "lets the teacher very easily slip back" from the open classroom. He wanted to "emphasize a very important point": the guides seemed to him "suggestive of structuring," because "it is a very content-oriented curriculum... I wonder if the materials don't beat the information to death a little bit."

Despite his criticism of MACOS as a fairly structured course, he did note positive change in the direction of his stated behavioral goals. We might call this the "communication" dimension that so many teachers described.

> I think they're questioning more. I think they realize that there's a lot that I can't tell them that they get themselves... I think my greatest success was having these kids work together in groups.

Compared with the center city experiences just described -- innovative factors at work, systems support for professional growth and change, analysis of another center-city system showed a very different set of factors in operation that were reflected in general teacher attitudes much more congruent with the stereotype of core city schools. Early in the fall, as he was beginning MACOS, the young male teacher of the 5D track said of his youngsters, not that they could do more than was expected of them, but rather:

> I don't think they will get that much out of it... they're a low group; compare and contrast is very difficult for them anyway...As my children aren't as eager to learn, it's more difficult to learn, naturally...they're frustrated. Well, they just forget it the second after it is taught, usually.

This teacher felt he could not permit discussions in class, because there was havoc if he let the children express themselves. While many of his fears were based on realistic worries -- his class did consist of low-IQ students and special behavior problems -- his most consistent response to these children was to expect the worst from them.

The young female teacher of the 5C track at this same school had a different view of her students and of the course. First, she admitted her own difficulty in understanding some of the material, particularly the concept booklets which covered the brain. She was also well aware of the value of enactive exercises for elementary youngsters:

> ...making the troop themselves, it visualized the environment for them...they love experiments...they are seeing how it is done.

When she discussed the environment board as a motivating device, however, she was by no means convinced of its educational value:

> Whether they get anything out of it or not, they love -- you know -- putting it together.

In terms of social skills, she found that her children "love helping each other... there is a lot of helping." While she recognized that "it is quicker than if the teacher taught them," she believed that the most satisfying thing is "if the child tries." Her year of experimenting with some new classroom techniques was not without its tensions for her. She began with the children in rows, then decided to try the group work:

> Well, that worked out for a little while, and then they were constantly talking, talking, talking. And I just put them back in rows again. I found that I could be more effective in rows... when I want to group them (now), I just sort of put the rows together and cut them up into groups. I don't have them that way all the time.

While she worried about control, she recognized the value of such grouping as an involving, productive work situation for her fifth-graders:

> ... dividing them into groups, you have them working more, you know, because they have their own little group, and they're part of that group... if you take the class as a whole, you'll have some kids that don't care what's going on in the room.

This teacher still felt herself to be the necessary locus of class learning, and thus vacillated between trying to create an interactive classroom and maintain her own authority and the disciplined control more common in center city classrooms. There was a very clear problem involved here: who is to have the power in the classroom, and how do we in curriculum and workshop development help teachers to consolidate skills of classroom management that do not depend upon the authoritarian figure?

The hardest thing for youngsters in this class was reading comprehension. Yet this teacher stressed readings, not the visuals. Her description of use of the course focused around the readings. And her criticisms were of the written language usage -- she would have liked wording "not as involved as it is" and less reading material. She noted her students' greater facility in spoken than in written response, and as the year closed she mentioned their ability to relate back to earlier parts of the course as they worked with it.

She did expect to continue grouping her class the following year and anticipated starting such grouping right away, so that students would become used to working together. Gains were made, both in teacher attitudes and in children's learning (see II, 152-168).

In comparison with other teachers interviewed, teachers in this school showed a very different view of their role in the classroom, of their expectations of children, and of their aspirations in teaching social studies. There was much less reflection and professional concern about classroom climate, except as a controlled, non-chaotic situation, and a primitive level of conceptualizing what social studies should contribute to the lives of these center city youngsters. One notices particularly in their comments the smallness of their expectations. In this case, the workshop leader was a young teacher who himself was going through considerable reevaluation and change in his own teaching style, trying to manage a questioning, open classroom, and feeling his own doubts and frustrations as well as successes. There was no strong, committed model to demonstrate the power of the open classroom, and the possible growth of center city children toward inner control and self-disciplined, productive behavior. And there was no history of such classrooms in the school. In light of these particulars, the changes that did begin to take place could be called considerable. We are forced, then, to the larger problem of follow-through. In this case, after one year, the program essentially disintegrated. Without continuing support for and use of innovative methods and materials, how can such teachers as the young woman just described continue to develop less restrictive concepts of the teacher role?

Ability Level

In classrooms where children were of mixed ability -- some very bright, high reading level, and some who were less able in reading and academic ability -- teachers found that the range of materials and suggested activities, and particularly the verbally interactive emphases of the course, were of special value to the less able youngsters, who could get help from the more able, and also from spoken rather than written exchanges of ideas.

> Kids read to each other. And the filmstrip thing, where it was read to them, it is more of a visual thing. The art work.... the fact that you can share; I think that some kids get it this way. They pick up things they couldn't get another way, from hearing other kids talk about it.

This same teacher, when asked what activities children like best in social studies, said:

> I think they like everything that is shared. Group work.

Relevance

The question of relevance was not brought up in suburban situations. It was only some center-city teachers who questioned the relevance of what they were teaching in MACOS, and this seems at best partially attributable to their general definition of children's potential and eventual role in life. Some of these teachers believed that what would be relevant to the city children were their own histories as black people, an understanding of the economics of buying, of police rights, etc. The suburban teachers, on the other hand, expected youngsters to find knowledge relevant, particularly learning that focused on behavior.

One workshop leader found it difficult to make the transition from the animal material to the Netsilik, and looked to EDC for some bridging material: a statement on universals, which she found helpful. A few teachers also mentioned the bridging problem. Those who interpreted the animal studies as discrete case studies -- "(The first half) really isn't man and animals" -- usually alluded to this problem.

Other teachers and workshop leaders found no problems in relating animal material to human material. Those who viewed the course from the beginning as the opportunity to compare man with other animals said such things as the following:

> If you can work with children and let them see that ...lower animals...have a structure, have a way of behaving, ways of learning, have a social structure as you talk about the baboons, what's more natural than to go into the work with people? I just feel the more things you can relate with, perhaps the more reasons you can decide why you are you.

Teacher Guide Comments

In what ways were teacher manuals seen as productive and in what ways did these guides prove unsatisfactory? Only one teacher -- a man in the center city -- felt the guides promoted a teacher-directed course or supported traditional learning. More common interpretations stressed satisfaction with the range of lessons and the power of the lessons to force insight into teaching. Perhaps enthusiasm and satisfaction give some slight support to the critical teacher's view: teachers don't seem at all shaken by the guides!

> I do think there are enough kinds of activities that would change a teacher. Not all teachers, but might change a person who has some flexibility in their personality...have them discover themselves.. There are so many different kinds of questions that come up...by having enough of it, you might make a nice discovery yourself as a teacher.

> Of course, EDC makes it easier for the teacher. Because they have suggested lesson plans and suggest motivations. This makes it easier for you. You can accept them or reject them, but sometimes they do give you ideas of different kinds of things to do.

> I couldn't work without it. It is a necessity.

The reinforcement of ideas in the course by several references and in different materials is an attribute noted by students in their responses to materials; the thematic repetition works to clarify and stabilize learning. This same reinforcement of lesson ideas in the guides was apparent to the teacher who said:

> I like the set-up they have. It's so beautiful. They

> have a section at the beginning where they state what they're trying to get at, and below they state the activities, and then they repeat what they're trying to get at. So it's interesting, because you see it several times. Sometimes when you teach, you forget the main idea of what you're trying to do. You get cornered, and you go off in different directions.

First year teachers clearly wanted to rely on the teacher guides, and further found some security in following the lessons as presented: "I want to stick to the order." Teachers -- certainly these first year teachers -- didn't experiment with lessons and techniques as much as one might anticipate, and spoke of very little deviation from EDC-suggested methods. Some able and inventive suburban teachers made critical comments about the lack of emphasis on individual research and independent project work in the course but rarely spoke of making adaptations in lessons that might have provided somewhat more independent study. Only one center city teacher described efforts of others in her school to permit their students to follow some individual interests during portions of the course, such as art or story telling.

Response to the Workshop:

From interviews, all reactions to the workshops indicate that their value was never focused on content only. There was a very clear excitement and delight in the opportunity to share common experiences with others, and to build on these common experiences a new understanding of the course and of ways of using materials and ideas. Further, teachers were frank in admitting their own need for specific motivation to review the material with some thoroughness.

> The workshops are excellent...First of all, it forces you to read the material. And that's good technique. Two, with new people starting -- the concerns of using the material, I have felt, have been more in evidence in the sharing of ideas. I gained something, very definitely, from meeting people with enthusiasm for the course...I've got a head start when I'm working with people who obviously enjoy working with it.
>
> The manuals and the things that the teachers have to use...expose me to a lot of other materials at a more adult level, so that I can filter it out and present whatever I feel is necessary for the children to know or what ever they may ask me for. In some instances, when I can't answer, I go to the workshop and ask...the value of the workshop is excellent for me, because then I have a much better understanding of how to approach them with these new materials, which in some instances are new to me.

There was a pragmatic, stablizing factor in the scheduled workshop. It provided a frequent opportunity to clarify unknowns in the material. Since teachers stressed their gratefulness for this continuing source of review, the talents and course mastery of the leader were obviously crucial; the workshop was the focus for clarifying topics in the course, and it seemed that the most effective leaders from the teachers' point of view, not only participated with the rest of the group in struggling with issues, but also served as special resources and master teachers on occasion. As other sections of the report on this topic suggest, leaders who lack a high level of course mastery cannot help failing their group in this crucial area.

The teacher quoted on the preceding page attended the suburban workshop run by a much-admired EDC staff member. Another teacher in this workshop commented:

> I'd say the best part of it is the workshop we have to take. You get in with a bunch of people, there must be 15 or 16, and there the excitement about the unit is contagious. It goes around and you get excited. Somebody says, "Well, I did it this way." You go home and you think, "What different way can I do it?" When we go to the workshop, he gives us plenty of time to discuss the kind of things we have done.

She further noted:

> I took a science workshop course once, and they got so involved in teaching science principles, rather than what we were going to be exposed to and how to take care of situations, that it became a complete drag. But this one is kind of fun.

This teacher had never wanted to teach social studies before. (Her comments are given on page 8). As she reflected back over the course, she felt her enthusiasm was high for MACOS compared with other social studies -- not because of the course per se, but:

> Mainly because of the workshop that we took. It wasn't a project to get through...We saw all the movies, and we did all the things that the kids were supposed to do. I was a very enthusiastic workshop goer, which I'm generally not. I'm not a meeting person.

In the second of our two center-city situations, the least successful in terms of workshop accomplishments, there was still evidence of an impetus to re-think one's professional role and goals in the light of the specific curriculum under discussion.

> It's good when you get together with another group of teachers, just to hear what's been done. It gives ideas of how somebody else taught in a particular way, and maybe you could teach it over again in that way.

We saw evidence that this teacher, over-controlling and restrictive of class activities, began to loosen up a bit in teaching style and class arrangement, experimenting with group work and beginning to explore class discussion, albeit tentatively. (See II, 152-168). We believe that an innovative, extensive curriculum such as MACOS has the power, when teachers work together in the process of teaching the course, to influence teacher behaviors.

The center-city leader in the more successful situation felt that her workshop not only helped teachers to see "that the children really can learn more than we think they can," but that topics that the teachers might have considered risky and controversial turned out to be possible and valuable classroom subjects. For example, on reproduction:

> There were some teachers who were ahead of others in the classroom, and when they saw that some of the kids had actually done some drawings of the gull, one on top of the other...it really made them feel more comfortable.

The workshop situation gave potentially controversial topics a hearing, where other teachers shared experiences; thus, the danger began to evaporate. The teachers began to relax and recognize that youngsters could and would work seriously on topics some had not considered appropriate for the fifth-grade classroom.

> And it's important that you do trust teachers to do these kinds of things, and they will...(one teacher) asked the children what areas they'd like to know more about. Overwhelmingly, they said mating... They saw the classroom as the place they could talk about this...It was really great. And the parents thought it was good.

Reproduction proved to be the topic that center-city youngsters found most personally intriguing. The course affords many opportunities for teachers and students to discuss together the topic of human and other animal reproduction, and the special qualities involved in human nurturance and care of the young, putting the topic in the context of survival of the species and dependency of the young. It is a responsible, responsive context that appeals to the deepest needs of young people at a time when their just-budding sexuality hints at serious questions they must address.

There seemed to be an unexpected complementariness between the teachers' guides and the workshop. Workshops promote a more **reflective teaching,** off-setting the rather programmatic nature of the teacher guides:

> (In the workshops) we get a chance to find out what kinds of things would you like to get from this discussion. But you have to ask yourself. This is great. You don't have a teacher's manual telling you what points you ought to get across. You are asking yourself what is important to you.

Just as the group work of youngsters in class promoted reflective **give - and - take** among them, the workshops promote reflectiveness about the material and the way it was used in the classroom.

> Somehow I'm doing more evaluating of my methods because I have a new unit. And a unit which is urging this kind of activity...it's so firmly built into this. Whenever you go to workshops with other teachers, it's required of you to think of what you're doing, and I have a lot.

Workshops were run in many different ways, ranging from once a week for an hour after school to full-day sessions several times during the year. The center-city leader, running full-day sessions, said:

> I personally feel the full day is better. We, of course, arrange for substitutes, and the teachers come in for a day and they have a chance not only to preview films and materials before they are shown in the classrooms, but they also get a chance to share with each other what's been happening back at the ranch. And they really learn a lot from that. They got ideas from each other, and they comforted each other. Shared their problems, and helped open suggestions toward solutions and that kind of thing, which is extremely valuable.

From the point of view of the teachers we interviewed, however, two to three-hour workshops seemed most well-received. While the leader ran full-day workshops, bringing together teachers from several schools once a month during the year, the teachers in her system did not wholeheartedly support this system:

> I would suggest not an all-day meeting. I would suggest a morning, because often in the afternoon we were doing things that we could have probably gone back to our building and had done after school or something...the meetings were entirely too long.

Summary

1. Teachers selected as the most salient and exciting characteristics of MACOS in the classroom:

    a. Diversity of activity and materials

    b. The verbal expressiveness and the respect for others' opinions encouraged by the activities

    c. The power of the film to convey the themes of the course

2. Teachers spoke less often of conceptual goals as a strength of the course than they did of materials and methods, pedagogic goals, and classroom climate. If we regard concepts and methods as two classes of behavioral outcomes, we find that teachers after using the course for a year agreed that pedagogic style -- interactive, communicative -- was for them the most important strength of the course. They were specific in discussing methods, while speaking more broadly and generally, and at less length, about the conceptual structure of the course.

3. Out of the interactive mode, teachers believed that children of all ability levels gained confidence in their own thinking and developed a willingness to express ideas.

4. On the whole, center-city teachers expressed a less integrated use of the course. Either they stressed expressive skills to the exclusion of content goals, or they were caught in the dilemma of authority-control concerns, where fear of (or disinterest in) student participation aborted the intentions of the course.

5. Criticisms varied from teacher to teacher; there was less consensus

on negative attributes of the course than on the positive factors. The most common criticisms were that traditional skills were neglected and that independent projects were not stressed. A functional suggestion which teachers often made was to shorten the time spent on the first half of the course. They felt that too long a period had been allocated to the early animal studies, to the detriment of the Netsilik unit. Evaluation findings based on student responses would support this suggestion.

6. Teacher workshops were enthusiastically praised. Criticisms were of structural components, such as the length of workshop (a full day being too long a time). Professional colleagueship, sharing of experiences about the course, and the intellectual stimulation of the meetings were the most frequently mentioned positive attributes.

7. Teacher manuals were almost unanimously extolled. Rather than seeking less specificity in lesson plans, first year teachers expressed appreciation for the explicitness of the suggestions and the clearly delineated continuum of lessons, many feeling they would have floundered without this guide.

8. Some first year teachers expressed their own difficulty in mastering the ideas of the course, finding the concepts complex and the amount of new material overwhelming.

9. One teacher made a critical suggestion that teacher participation in the course should be, if possible, of a voluntary nature. Teachers who hesitated to take on this new challenge would not be coerced into teaching the course; as they saw and learned about the experiences of MACOS teachers, they might decide for themselves to try the new

materials. Other concerns involved continuity of studies for youngsters: what follows in the sixth, seventh grades, etc., after MACOS? What is available for youngsters that helps them build on and utilize the methods, attitudes and knowledge of the course?

APPENDICES

A. Description of Sample
B. Sample Instruments
C. Observation Forms
D. Interview Questions
E. Sample Interviews

APPENDIX A

Description of Sample

EVALUATION SAMPLE AND METHODOLOGY

MACOS

Number of Schools:	1967-68:	55 schools in 14 school systems across the country in both urban and suburban settings.
	1968-69:	25 schools in 6 school systems in the East in both urban and suburban settings.
Number of Classrooms:	1967-68:	123
	1968-69:	39
Number of Students:	1967-68:	2,182
	1968-69:	821
Demographic Characteristics:	1967-68:	51% Male
		49% Female
		4% Fourth Grade
		58% Fifth Grade
		29% Sixth Grade
		10% Ungraded Classes
	1968-69:	50.3% Male
		49.7% Female
		46.0% Fifth Grade
		54.0% Sixth Grade

Testing of Students:	1967-68:	Pre and post-tests containing multiple-choice and open-ended items on information, concepts and attitudes. Three student checklists objective in format covering classroom environment, student involvement and participation, success of various media, personal assessment of attitudes and learning styles.
	1968-69:	Pre and post-tests contains multiple-choice items on information, concepts and attitudes. Four student checklists objective in format and similar in purpose to those administered in 1967-68.
Selected Student Interviews:	1967-68:	85 students in 12 classrooms, three urban and one suburban. Students in local settings were seen an average of five times during the school year.
	1968-69:	52 students in 7 classrooms one urban, two small city, and two suburban settings. All students except for those in one city were seen on an average of 5 times during the school year.
Selected Teacher Interviews:	1967-68:	Beginning, middle and end-of-year interviews with teachers of classes in which students were also interviewed.
	1968-69:	The same procedure as above.

Classroom Observations:	1967-68:	60 observations in 22 classrooms taught by 4 men and 14 women.
	1968-69:	49 observations in 7 classrooms taught by 3 men and 4 women.
Interviewers and Observers in the Field:	1967-68:	Seven evaluation staff members; and additional observations by course developers supervised by evaluation personnel.
	1968-69:	Five evaluation staff members.
Teacher Evaluation of the Course:	1967-68:	70 questionnaires returned from teachers in tested classrooms.
	1968-69:	---
Methods of Evaluation:	1967-68:	Statistical analyses of objective instruments and clinical interpretations of interviews and descriptive materials.
	1968-69:	The same procedure as above.

Controls (1968-69 only)

Number of Schools:	5 school systems in urban, small city and suburban settings in the East.
Number of Classrooms:	14
Testing of Students:	Checklists objective in format covering classroom environment, student involvement and participation, success of various media, personal assessment of attitudes and learning styles. (9 of 14 classrooms)
Demographic Characteristics of Tested Students	37% Male 63% Female[*] 100% Fifth Grade
Selected Student Interviews:	End-of-year interviews with 21 students in 4 classrooms.
Selected Teacher Interviews:	Interviews with teachers in four classrooms.

---

[*] The predominance of girls in the private school sample accounts for the high female percentage.

Classroom Observations: 20 observations in 5 classrooms located in the greater Boston area.

Interviewers and Observers in the Field: 4 evaluation staff members.

Method of Evaluation: Statistical analyses of objective instruments and clinical interpretations of interviews and descriptive materials.

APPENDIX B

Sample Instruments

Man and Animals — Fall 1968

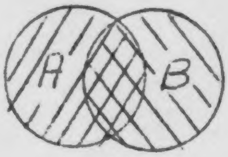
Education Development Center

(Pre-Post Test)

Name: ______________________ School: ______________________

Sex: (check one) ____girl ____boy Teacher: ______________________

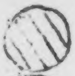
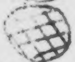
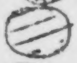
Grade: _______ Date: ______________________



This diagram shows the areas in which two baboon troops live. Troop A lives in Section A. Troop B lives in Section B. Questions 1 through 4 below are about this diagram.

1. Which is the overlapping section? (Choose one answer and write its number in the box.)

☐ (15)

1. 
2. 
3. 
4.

2. The overlapping section is one that: (Choose one answer and write its number in the box.)

☐ (16)

1. none of the animals use
2. both groups use

3. Compared to the other two sections, the overlapping section would NOT be: (Choose one answer and write its number in the box.)

☐ (17)

1. richer in food and water
2. the same
3. poorer in food and water

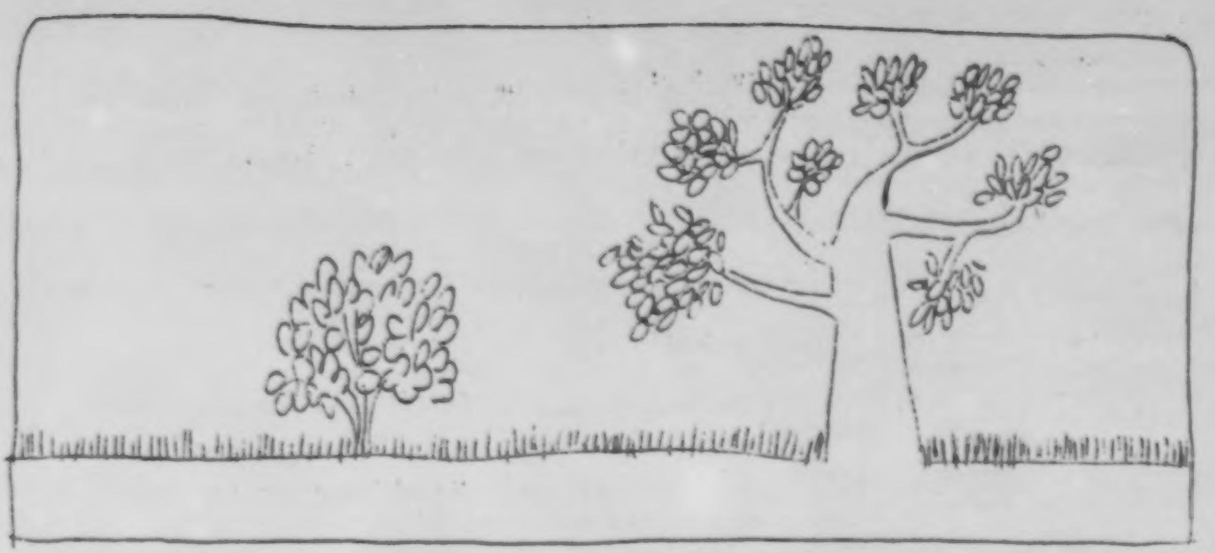
4. When two troops come together: (Choose one answer and write its number in the box.)

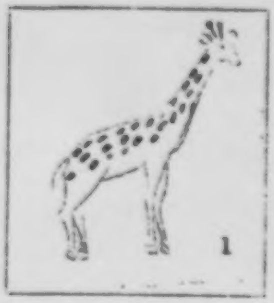
☐ (18)

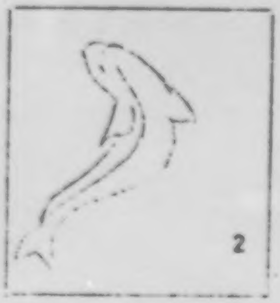
1. the larger troop would share the food and water with the smaller troop
2. the troops might be nervous
3. young baboons of the two troops would play together

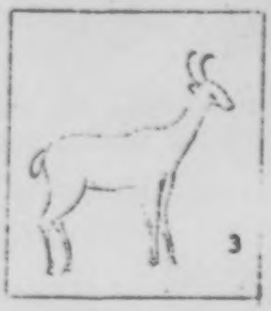
5. Read each sentence. If you think it is true, color in the box beside the sentence under True. If you think it is false, color in the box under False. If you don't know, color in the box under Don't Know.

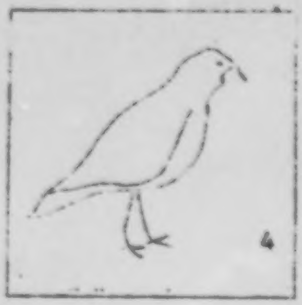
True	False	Don't Know			
☐	☐	☐	a.	An animal gathers information through its sense organs.	(19)
☐	☐	☐	b.	In many animal groups more babies die than live.	(20)
☐	☐	☐	c.	You can see and touch the signals that the brain sends to the body.	(21)
☐	☐	☐	d.	Male baboons protect their own children better than they protect other young baboons.	(22)
☐	☐	☐	e.	When a herring gull chick looks hungry, its parents feed it.	(23)
☐	☐	☐	f.	Baboons care for their young longer than herring gulls care for their young.	(24)
☐	☐	☐	g.	Information from the environment is necessary for an animal's survival.	(25)
☐	☐	☐	h.	Human beings are animals.	(26)
☐	☐	☐	i.	An animal's brain receives information and sends signals to the different parts of the body.	(27)
☐	☐	☐	j.	When we examine how something is built, we can tell a lot about how it is used.	(28)
☐	☐	☐	k.	A group of animals might decide to change the way it looks because its environment has changed.	(29)
☐	☐	☐	l.	Whenever a gull sees sticks, it wants to build a nest.	(30)
☐	☐	☐	m.	A brown rabbit has a better chance of surviving in a dark forest than a white rabbit.	(31)

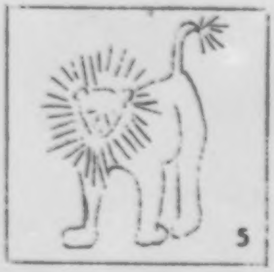


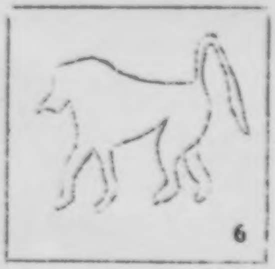


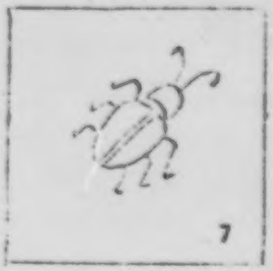












6. Look at the pictures. Then write in the box below the number of the picture showing an animal you think would not be able to live in the place shown.

☐ (32)

7. If all animals like those in picture 5 died, what would happen to the animals like those in picture 3? (Write the number of your answer in the box.)

   1. nothing would happen
   2. the group would increase in number at first
   3. they would live happily
   4. they would have a bigger food supply

☐ (33)

8. Baboon troops never leave their home range. This is because:
(Choose one answer and write its number in the box.)

1. They don't want to leave sick or old baboons too far behind.
2. No one is sure of the reason.
☐ 3. They don't want other animals to get the things they have built up. (34)
4. They are able to survive only in that special area.

9. A salmon is able to find its way back to its birthplace because:
(Choose one answer and write its number in the box.)

1. Some member of the group has made the trip before.
2. The parents tell the way to their young.
☐ 3. Each salmon remembers the smell of its river. (35)
4. Salmon learn to do this by trial and error.

10. The group life of a baboon troop allows: (Write the number of each answer you choose on the line beside that answer. Choose as many as you wish.)

___ 1. young baboons to play organized games (36)
___ 2. an adult to share meat with an infant (37)
___ 3. the males to keep peace in the troop (38)
___ 4. the males to hunt while the females gather food (39)
___ 5. other females to help a mother with her newborn infant (40)
___ 6. the males to protect the females and babies (41)

11. During their lifetimes, animals learn to do many things. They are able to do other things without learning. Read each sentence below. Then write a "1" in the box next to the sentence if you think it is something the animal learns or a "0" in the box if you think the animal could do that thing without learning how to do it.

Herring Gull

☐ a. find the edge of its territory (42)

☐ b. peck at the red spot on its parent's beak (43)

☐ c. crouch when in danger (44)

☐ d. recognize its chicks by spots on the head (45)

Baboon

☐ a. know the alarm calls of other animals (47)

☐ b. cling to its mother's chest (48)

☐ c. make sounds (49)

☐ d. give special calls at special times (50)

12. Actions, sounds and words are all ways of communicating. There are some things that human beings and many animals can express. There are other things that only human beings can express. In the box beside each statement, write a

1 if the statement can be expressed by human beings and some other animals

2. if the statement can be expressed only by human beings

☐ Danger! (51)

☐ Last summer my family went to the country. (52)

☐ Tomorrow we will have to get more food. (53)

☐ In China it is night-time now. (54)

☐ I am angry. (55)

☐ The big green monster climbed slowly out of the lake. (56)

☐ I feel so sad. (57)

☐ Do you know where my friends are? (58)

☐ If I don't find a shelter, I will have no place to sleep. (59)

☐ I'm lost! (60)

Word Meaning

In column A are some words you have read and used during this course. Please read each one. Then find in Column B the best definition for the word and write that letter in the box next to the word in Column A.

Column A

☐ structure
☐ reproduction
☐ juvenile
☐ human being
☐ life cycle
☐ environment
☐ offspring
☐ predator
☐ innate
☐ behavior

Column B

a. the young of any animal (61)
b. one's surroundings (62)
c. the opposite of animal (63)
d. a mammal and a primate (64)
e. the special way something is built (65)
f. jump to one side (66)
g. a young human or other young animal (67)
h. a delinquent or bad teenager (68)
i. a special way in which something is used (69)
j. a hunter of other animals (70)
k. giving birth to young (71)
l. the ways an animal acts (72)
m. a baby gorilla (73)
n. not learned (74)
o. the pattern of birth, having babies and dying (75)
p. good or bad manners (76)

Please read the five paragraphs below. (15-29)

True	False	Reason	
☐	☐	☐	It was early morning in Africa and the scientist Irven DeVore started out to continue his study of baboons. As he drove along, he came to an area where he saw a few trees, some low vegetation, a grassy plain and a water hole. He decided this would be a good place to stop.
☐	☐	☐	He was looking for a new troop of baboons if he could find one, because he felt he couldn't learn much by watching the same baboons day after day.
☐	☐	☐	"I can't tell one from the other anyway. One baboon is just like the next," he laughed to himself.
☐	☐	☐	Dr. DeVore did not bring his field glasses with him because he knew baboons are never disturbed by human beings. Any troop would allow him to come very close.
☐	☐	☐	He especially looked forward to playing with the baby baboons.

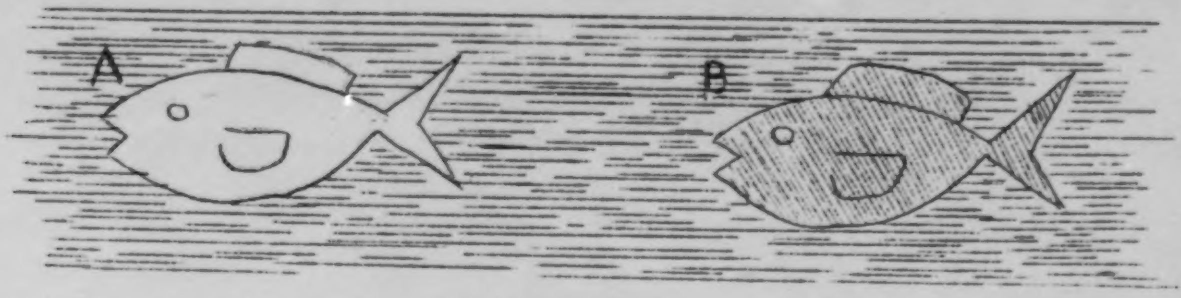
Some of the paragraphs you just read give correct information about the way a scientist would work and think. Others are not at all true.

Read the first paragraph again. If you think what it says is true, color in the box beside the paragraph under True. If you think it is false, color in the box under False. After you have done this, read the numbered sentences below. Choose the sentence that tells why you decided the paragraph was true or false. Write the number of your reason in the box under Reason.

Do the same thing for each paragraph.

Reasons

1. Baboons are not bothered by the presence of human beings.
2. Every baboon in a troop can be identified by the way it looks and acts.
3. Baboons are never found where there are only a few trees and some low vegetation.
4. All adult baboons are so alike in appearance that we cannot tell them apart.
.. A scientist can't learn very much by watching only a small group of one type of animal.
6 To get the best observations, we should not let baboons become aware that they are being watched.
7. The baboon troop guards infants very closely and would not let a stranger get near one.
8. Troops of baboons are found in an area that provides food, water and some trees.
9. By studying one troop of baboons very closely a scientist is able to learn a great deal about all baboons.



Both fish live in the same river and both would make a tasty meal for their sharp-eyed enemies. In the box beside each statement, write a

1 if the statement is true

2 if the statement is false

3 if you don't know

☐ Fish B is more likely to survive in this river than Fish A. (30)

☐ If Fish A breaks its fin, its offspring will have broken fins. (31)

☐ Fish A and Fish B may be two varieties of the same species of fish. (32

☐ In 100 years, there are likely to be many more fish like "A" than like "B" in the river. (33)

☐ If the food supply in the river changes, the fish will decide whether they want to eat the new food or move to another river. (34)

On the list below, there are some things that only human beings do, some things that only human beings and chimpanzees do, and some things that human beings, chimpanzees and baboons do. In the box next to each statement, write a

1 if only human beings do it

2 if only human beings and chimpanzees do it

3 if human beings, chimpanzees and baboons do it

☐ may do things together with individuals they do not know well (35)

☐ make tools (36)

☐ mothers care for their young for at least 6 months (37)

☐ eat meat and fruit (38)

☐ the young recognize their father and mother (39)

☐ may spend some of the day alone (40)

☐ enjoy playing (41)

☐ tell stories to their young (42)

☐ males hunt and females gather food (43)

☐ greet others with kisses and hugs (44)

Evaluation Checklist II

Man and Animals
February 1969

Dear Students:

This is our second checklist. You have had some new materials and learned about new animals since the last one. We would like to find out what you think of E.D.C. social studies now.

What you say in this checklist will be confidential and will be seen only by the E.D.C. evaluators.

Sincerely,

The E.D.C. Evaluators

Education Development Center
44A Brattle Street
Cambridge, Massachusetts 02138

Name: ______________________________ Date: ____________________

School: ____________________________

Teacher: ___________________________

Grade: ______

(Check one) ____ girl ____ boy

1. While studying about Baboons the boys and girls in my class have spent most of the time:
(Check 2 answers)

(15) ____ reading

(16) ____ doing projects, drawing

(17) ____ writing answers to questions

(18) ____ listening to the teacher

(19) ____ talking to each other about the course

(20) ____ answering the teacher's questions

(21) ____ taking notes

(22) ____ watching films

(23) ____ other (write in your answer: ______________________________)

2. While studying about Baboons the boys and girls in my class have been:
(Check 3 answers)

(24) ____ asking a lot of questions
(25) ____ confused
(26) ____ talking to each other about the course
(27) ____ wishing we wouldn't have to spend so much time on each booklet
(28) ____ bored
(29) ____ trying to do a good job
(30) ____ silly
(31) ____ interested
(32) ____ taking part
(33) ____ wishing we could go more slowly
(34) ____ wishing we could go faster

3. If I had to describe my Man and Animals class, I would use the words:
(Check 2 answers)

(35) ____ easy
(36) ____ confusing
(37) ____ makes me think
(38) ____ hard
(39) ____ fun
(40) ____ not very important
(41) ____ my favorite subject
(42) ____ boring
(43) ____ other (What is it?____)

4. While studying about Baboons, I have been:
(Check 3 answers)

(44) ____ confused

(45) ____ thinking a lot about Baboons

(46) ____ bored

(47) ____ listening to what is being said in class

(48) ____ thinking a lot about human beings

(49) ____ talking about Baboons

(50) ____ interested

(51) ____ unable to understand why we are studying about Baboons

(52) ____ asking questions

(53) ____ answering the teacher's questions

(54) ____ working on projects

(55) ____ learning a lot of things I never knew before

(56) ____ wishing we could go more slowly

(57) ____ wishing we could go faster

5. When I studied about Baboons:
(Check one answer)

(58)

____ 1. I always asked questions

____ 2. I sometimes asked questions

____ 3. I hardly ever asked questions

____ 4. I never asked questions

6. I learned most about Baboons when I:
(Check three answers)

(59) ____ read the baboon booklets

(60) ____ did projects like the environment boards

(61) ____ watched films and slides

(62) ____ listened to the ideas of my classmates

(63) ____ asked questions

(64) ____ listened to the teacher

(65) ____ talked in class about Man and Animals

(66) ____ wrote answers to questions

(67) ____ wrote stories or reports

(68) ____ other (Please write in your answer:______________________________)

7. Which did you like best?
(Check 2 answers)

(69) ____ salmon booklets

(70) ____ herring gull booklets

(71) ____ baboon booklets

(72) ____ chimpanzee booklet

(73) ____ Irven DeVore's Field Notes

(74) ____ the booklets on animal adaptation and behavior

8. Which did you enjoy doing most?
(Check 2)

(15) ____ making environment boards

(16) ____ observing other students

(17) ____ reading booklets

(18) ____ watching films

(19) ____ talking about my ideas in class

(20) ____ listening to the record

(21) ____ doing worksheets

(22) ____ listening to the teacher

(23) ____ other (What was it?______________________________)

9. Which did you like best?
(Check two answers)

(24) ____ the salmon film

(25) ____ the herring gull film and slides

(26) ____ the film on the animals in the Amboseli Game Park

(27) ____ the chimpanzee film

(28) ____ the baboon films

(29) ____ the sniltie slides

10. While studying about Man and Animals, I liked to work best:
(Check one answer)
(30)

____1. by myself

____2. in a small group

____3. in one big group (with the whole class)

11. When studying about Man and Animals, I learned the most about man when I:
(Check two answers)

(31) ____ read the booklets
(32) ____ talked about my ideas in class
(33) ____ observed other students
(34) ____ watched the films
(35) ____ listened to the teacher
(36) ____ did a special report or project
(37) ____ listened to the ideas of other students
(38) ____ other (What was it?________________________________)

12. I learned the most about other animals when I:
(Check two answers)

(39) ____ read the booklets
(40) ____ talked about my ideas in class
(41) ____ observed other students
(42) ____ watched the films
(43) ____ listened to the teacher
(44) ____ did a special report or project
(45) ____ listened to the ideas of other students
(46) ____ other (What was it?________________________________)

13. On the line beside each sentence, write a

1 if you AGREE with it

2 if you DO NOT AGREE with it

3 if you CAN'T DECIDE

(47) _____ When you read something, you know it is true.

(48) _____ The best way to learn something for school is to look it up in a book.

(49) _____ Only anthropologists learn from doing observations.

(50) _____ I would rather learn by reading than by doing observations.

(51) _____ Kids learn a lot by doing observations.

(52) _____ My classmates often have good ideas to share.

(53) _____ I don't trust my own opinions.

(54) _____ It is hard to learn something new unless it is explained to me.

(55) _____ Opinions I read in books are more important than my own ideas.

(56) _____ Most grown-ups care a lot about my opinions.

(57) _____ It is very hard to do observations if you are not an anthropologist.

(Pre-Post Test)

EDUCATION DEVELOPMENT CENTER
15 Mifflin Place
Cambridge, Massachusetts 02138

Name:______________________________ Grade:________

School:_____________________________ Date:______________________________

City:_______________________________ Circle One: boy girl

Teacher:____________________________

ARCTIC

(The Arctic is the area near the North Pole.)

(15) ugly :______:______:______:______:______: beautiful

(16) changing :______:______:______:______:______: changeless

(17) windy :______:______:______:______:______: calm

(18) strange :______:______:______:______:______: familiar

(19) explored :______:______:______:______:______: unexplored

(20) tame :______:______:______:______:______: wild

(21) good :______:______:______:______:______: bad

(22) deserted :______:______:______:______:______: inhabited

(23) fierce :______:______:______:______:______: gentle

(24) livable :______:______:______:______:______: not livable

ESKIMO FAMILIES

(25) sharing :_______:_______:_______:_______:_______: selfish

(26) simple :_______:_______:_______:_______:_______: complex

(27) lazy :_______:_______:_______:_______:_______: hardworking

(28) happy :_______:_______:_______:_______:_______: sad

(29) kind :_______:_______:_______:_______:_______: cruel

(30) poor :_______:_______:_______:_______:_______: rich

(31) primitive :_______:_______:_______:_______:_______: advanced

(32) light :_______:_______:_______:_______:_______: dark

(33) ignorant :_______:_______:_______:_______:_______: wise

(34) lawful :_______:_______:_______:_______:_______: lawless

COOPERATION

(35) human :_______:_______:_______:_______:_______: animal

(36) together :_______:_______:_______:_______:_______: alone

(37) bad :_______:_______:_______:_______:_______: good

(38) necessary :_______:_______:_______:_______:_______: not necessary

(39) hard :_______:_______:_______:_______:_______: easy

(40) lasting :_______:_______:_______:_______:_______: brief

(41) innate :_______:_______:_______:_______:_______: learned

(42) chosen :_______:_______:_______:_______:_______: forced

(43) complex :_______:_______:_______:_______:_______: simple

(44) male :_______:_______:_______:_______:_______: female

AMERICAN FAMILIES

(45) sharing :_______:_______:_______:_______:_______: selfish

(46) simple :_______:_______:_______:_______:_______: complex

(47) lazy :_______:_______:_______:_______:_______: hardworking

(48) happy :_______:_______:_______:_______:_______: sad

(49) kind :_______:_______:_______:_______:_______: cruel

(50) poor :_______:_______:_______:_______:_______: rich

(51) primitive :_______:_______:_______:_______:_______: advanced

(52) light :_______:_______:_______:_______:_______: dark

(53) ignorant :_______:_______:_______:_______:_______: wise

(54) lawful :_______:_______:_______:_______:_______: lawless

II. Read each sentence. If you agree with what it says, color in the box beside the sentence under Agree. If you do not agree, color in the box under Do Not Agree. If you don't know, color in the box under Don't Know.

	Agree	Do Not Agree	Don't Know	
(55)	☐	☐	☐	A Netsilik Eskimo mother is just as happy when she gives birth to a girl as she is when she gives birth to a boy.
(56)	☐	☐	☐	A Netsilik Eskimo woman must have a husband to survive, but a Netsilik man can live very well alone.
(57)	☐	☐	☐	Through language man and other animals are able to communicate ideas to each other.
(58)	☐	☐	☐	Using magic words and following old customs make a Netsilik Eskimo feel safe.
(59)	☐	☐	☐	Four hunters working together at a crossing place can usually kill more caribou than four hunters working alone.
(60)	☐	☐	☐	There are some people around the world who are not like Americans in any way.
(61)	☐	☐	☐	A Netsilik Eskimo would be happier living in a warmer climate.
(62)	☐	☐	☐	If a Netsilik Eskimo were angry, he would probably sing a song.
(64)	☐	☐	☐	Man and other animals all have beliefs.
(65)	☐	☐	☐	If a Netsilik Eskimo is not a successful seal hunter, his family will starve.
(66)	☐	☐	☐	Netsilik Eskimos and Americans have similar feelings toward people.
(67)	☐	☐	☐	Netsilik Eskimo children learn about Netsilik beliefs by reading books.
(68)	☐	☐	☐	Netsilik Eskimos think of hunting as a sport.
(69)	☐	☐	☐	The differences among people are so great that some people are more like other animals than they are like people.
(70)	☐	☐	☐	Magic helps Netsilik Eskimos to be good hunters.

III. Put a ✓ next to all tools on the following list:

(15) ____ hammer

(16) ____ pencil

(17) ____ eye glasses

(18) ____ spoon

(19) ____ tree

(20) ____ envelope

(21) ____ lake

(22) ____ lightbulb

(23) ____ nail

(24) ____ saw

(25) ____ insect

(26) ____ snowplow

(27) ____ door

(28) ____ dirt

(29) ____ sun

(30) ____ camera

IV. If a group of Netsilik Eskimos came to visit us, they would learn some things about our lives that would seem familiar to them. Other things would seem strange and unfamiliar.

For each of the phrases below:

Put an F next to those things about us that would seem familiar to an Eskimo.

Put an S next to those things about us that would seem strange and unfamiliar.

(31) _____The way we feel about dogs.

(32) _____The games young children play.

(33) _____The way children and parents feel about each other.

(34) _____The fact that sometimes we move to a new home.

(35) _____The way we feel when we have done something wrong.

(36) _____The way we feel about hunting animals.

(37) _____The fact that we travel to another place just for fun.

(38) _____The way we feel when a friend makes fun of us.

(39) _____The fact that we use words to express our feelings and ideas.

(40) _____The fact that people are punished when they hurt others.

(41) _____The fact that some people want to live alone.

Evaluation Checklist II

Netsilik Eskimos

1969

Dear Students:

Now that you have studied about the Netsilik Eskimo, we are especially interested in knowing what your opinion is of the whole unit. We hope that you will be very honest in the answers you give, because in that way you can be of most help to us.

What you say in this checklist will be confidential and will be seen only by the EDC Evaluators.

Sincerely,

The EDC Evaluators

Education Development Center
15 Mifflin Place
Cambridge, Massachusetts 02138

Name:________________________ Date:____________________

School:________________________

Teacher:________________________

Grade:________________________

(Check one) __________Girl ________Boy

1. If I had to describe the unit on the Netsilik Eskimos, I would use the words:

   (Check 2)

   (15) ______easy
   (16) ______confusing at times
   (17) ______hard
   (18) ______makes me think
   (19) ______fun
   (20) ______not very important
   (21) ______boring
   (22) ______my favorite subject
   (23) ______other (what is it?________________________)

2. So far I have learned the most about the Netsilik Eskimos from:

   (Check 3)

   (24) ______reading the booklets
   (25) ______seeing movies and slides
   (26) ______playing hunting games in class
   (27) ______listening to records
   (28) ______taking part in small group discussions
   (29) ______taking part in whole class discussions
   (30) ______listening to the teacher explain things
   (31) ______making things such as tools
   (32) ______drawing maps and pictures
   (33) ______acting things out
   (34) ______other (what is it?________________________)

3. Which part of the Eskimo unit was most interesting?
(Check one)

(35) ______learning about Arctic animals
(36) ______learning about the tools Eskimos use
(37) ______learning about the way Eskimos live and work
(38) ______learning about the Eskimos' feelings, dreams and religion

4. While studying about Netsilik Eskimos I liked best:
(Check 3)

(39) ______playing the games
(40) ______using Eskimo cards
(41) ______reading the booklets
(42) ______writing reports
(43) ______watching films
(44) ______discussing things about the Eskimos
(45) ______making things such as tools
(46) ______listening to records
(47) ______drawing pictures or maps
(48) ______acting out stories
(49) ______other (what is it?______________________________)

5. Of the reading, I liked best:
(Check two)

(50) ______poems
(51) ______journal
(52) ______stories
(53) ______information on the Arctic and Arctic Animals
(54) ______The Many Lives of Kiviok
(55) ______The True Play of How Itimangnark Got Kingnuk, the Girl He Really Wanted

6. Of the following films, I liked best the one on:
(Check one)

(56) ______traveling in winter and building igloos

(57) ______hunting seals

(58) ______people playing games inside the igloo and sharing seals

(59) ______Eskimo stone carvings and how they tell the legend of how the Raven lost its voice.

7. To get good marks when studying about the Netsilik Eskimos I had to:
(Check 3 answers)

(60) ______memorize all the facts in the booklets

(61) ______read well

(62) ______be able to think of a lot of good examples

(63) ______take part in class discussions

(64) ______remember everything the teacher said

(65) ______agree with the teacher

(66) ______have my own opinion

(67) ______write well

(68) ______do extra projects

(69) ______be able to talk about what I saw in films

(70) ______try to be as quiet as possible

(71) ______bring in extra information about Eskimos

(72) ______answer a lot of the teacher's questions

(73) ______other (What is it?________________________________)

8. While studying about Eskimos the boys and girls in my class have spent most of the time:

(Check 2 answers)

(15) ______reading
(16) ______doing projects, drawing
(17) ______writing answers to questions
(18) ______listening to the teacher
(19) ______talking to each other about the course
(20) ______answering the teacher's questions
(21) ______taking notes
(22) ______watching films
(23) ______other (write in your answer:______________________________)

9. When studying the Netsilik Eskimos, my classmates and I asked:

(Check 1 answer)

(24)

____1.many questions
____2.a few questions
____3.hardly any questions

10. From studying the Netsilik Eskimos, how well do you feel you know what it is like to be an Eskimo?

(Check one)

(25)
____1.very well
____2.somewhat
____3.not well at all

11. Which of the following units did you find the most interesting? (Check one answer)

(26) ______The Salmon
(27) ______The Herring Gull
(28) ______The Chimpanzee
(29) ______The Baboon
(30) ______The Netsilik Eskimo

12. Check the unit you found to be somewhat boring:

(31) ______The Salmon
(32) ______The Herring Gull
(33) ______The Chimpanzee
(34) ______The Baboon
(35) ______The Netsilik Eskimo

APPENDIX C

Observation Forms

CLASSROOM OBSERVATION FORM 1967-68

I. Physical description
  A. Size of class
  B. Room: age
    furniture
    cheerfulness, student/teacher decorations
  C. Seating arrangement
    pattern of seats
    sex segregation

II. Teacher
  A. Age
  B. Style
    1. Personality (loudness, reserved/vivacious, relaxed, amount and type of movement)

    2. Sensitivity (What arouses her pleasure; ire?)

    3. What type of student does she aim at (verbal, creative)?

    4. Does she draw out students?

    5. Stance:
      a. Stays in front of room apart from students
      b. Is physically part of a student group

C. Participation.
Amount (Does teacher talk most of the time: lecture?)

Are exchanges student-to-student or student-to-teacher?

Do most of the questions come from the teacher?

Kinds of questions:
factual/opinion

specific short answer

lengthy response

other(specify)

Lesson:
open-ended discussion

guided discussion

question and answer

Teacher role:
authority
guide
resource

Does teacher seem interested in the material?

Are there real issues in the material with which she is involved?

D. Attitude toward students:
Will she admit lack of knowledge?

Does she talk down to students?

E. Preparation:
Does she know the material?

III. Methods

A. Content of lesson

B. Kinds of activities which occurred during lesson(indicate if simultaneous)

Enactive/symbolic

Verbal/visual(e.g. use of chalkboard)

C. Structure of lesson
What are the objectives of the classroom session?

Any explicit review of previous lesson?

Is there a conclusion or summary?

To what extent does the class generalize?

To what extent do students relate content to their own experience?

Does teacher encourage this?

Does incidental learning occur?

Digressions?

IV. Students
- A. Amount and content of noise
- B. Amound of student movement around classroom
- C. Amount and kind of non-participation

D. Are whole sections of the class excluded?

Are non-hand raisers ignored?

E. Student participation: Injecting new ideas or asking questions

Answering teacher's questions

Discussion between students about the material

Group work
General attention level
General interest level

(Pre-Post Test)

Man, a Course of Study

Observations

Observer:	____________	Date:	____________
Teacher:	____________	School:	____________
Topic of lesson:	____________	City:	____________
Length of lesson:	____________		

A. Description of the content of the lesson.

Note especially: way in which the lesson was introduced and concluded, materials used and reactions to them, examples of questions, answers, and comments by teacher and pupils.

Note particularly use of examples, comparisons, generalizations, recall of prior learning, connections between animal and human, use of EDC vocabulary, unusual behaviors.

B. Enter the number of the classroom structure beside each activity that took place.

whole class = 1
small group = 2
individual = 3
other (specify) = 4

(15) ____ arts and crafts
(16) ____ viewing
(17) ____ reading - text
(18) ____ reading - other
(19) ____ writing
(20) ____ lecture by teacher
(21) ____ guided discussion
(22) ____ role-play
(23) ____ listening (records, etc.)
(24) ____ student report
(25) ____ question-answer
(26) ____ open-ended discussion
(27) ____ laboratory
(28) ____ other (specify: ______________________)

C. Time sequence of activities:

(28) ____ at least some simultaneous
(29) ____ one activity at a time

D. Objective of lesson (check no more than two):

(30) ____ information
(31) ____ concepts
(32) ____ skills
(33) ____ interpersonal behavior
(34) ____ too difficult to decipher
(35) ____ other (specify: ____________________________)

E. (36) Teacher ignored EDC-suggested lesson ____:____:____:____:____:____:____ Teacher carefully followed EDC plan.

F. Evaluation of non-verbal activity:

(37) Low student interest ____:____:____:____:____:____:____ High student interest.

(38) Less than 1/3 participation ____:____:____:____:____:____:____ Almost all participate.

(39) Quiet ____:____:____:____:____:____:____ Noisy.

(40) Students have no clear sense of purpose. ____:____:____:____:____:____:____ Students have sense of purpose.

(41) Teacher's role: Authority ____/____:____:____:____:____/____ Non-participant.
guide resource

G. Percent of lesson devoted to verbal activities (check one):

(42) ____25

(43) ____50

(44) ____75

(45 ____100

H. Evaluation of verbal aspects of lesson:

(46) Factual questions ____:____:____:____:____:____:____ Opinion questions

(47) Short answer ____:____:____:____:____:____:____ Lengthy response.

(48) Questions mostly from teacher ____:____:____:____:____:____:____ Questions mostly from students.

(49) Teacher asks few questions ____:____:____:____:____:____:____ Teacher asks many questions.

(50) Exchanges largely student to teacher ____:____:____:____:____:____:____ Exchanges largely student to student

(51) Students ignore each other's statements ____:____:____:____:____:____:____ Students listen to each other.

(52) Many irrelevant statements ____:____:____:____:____:____:____ Statements relevant to topic.

(53) Students use few personal examples ____:____:____:____:____:____:____ Students use many personal examples

(54) Students references to materials (Use only spaces 1=none, 4=some, and 7=many.)

____:____:____:____:____:____:____

(55) Teacher sets and controls agenda ____:____:____:____:____:____:____ Students initiate topics of discussion

(56) Student interest low ____:____:____:____:____:____:____ Student interest high

(57) Less than 1/3 participation ____:____:____:____:____:____:____ Almost all participate.

(58) Quiet ____:____:____:____:____:____:____ Noisy

(59) Students have no clear purpose ____:____:____:____:____:____:____ Students have sense of purpose

(60) Teacher's Role: Authority ____/____:____:____:____:____/____ Non-participant
guide resource

(61) Quality of verbal activities poor ____:____:____:____:____:____:____ Quality -- excellent

I. Classroom atmosphere (considering the session as a whole):

(62) Teacher is authoritarian ____:____:____:____:____:____:____ Permissive.

(63) Teacher is reserved ____:____:____:____:____:____:____ Expressive.

(64) Teacher doesn't show pleasure ____:____:____:____:____:____:____ Shows pleasure

(65) Teacher doesn't show anger ____:____:____:____:____:____:____ Shows anger.

(66) Teacher's voice extremely loud ____:____:____:____:____:____:____ Extremely soft.

(67) Teacher ill-at-ease ____:____:____:____:____:____:____ Relaxed, enjoys lesson.

(68) Teacher is bored ____:____:____:____:____:____:____ Involved with subject.

(69) Teacher doesn't draw out students ____:____:____:____:____:____:____ Makes obvious effort to draw out students.

(70) Teacher talks down to students - much ____:____:____:____:____:____:____ None.

(71) Class is teacher-dominated ____:____:____:____:____:____:____ Has tone of cooperative venture.

(72) Teacher's style idea oriented ____:____:____:____:____:____:____ "People" oriented.

(73) Overall student interest - low ____:____:____:____:____:____:____ High.

(74) Overall student participation - less than 1/3 ____:____:____:____:____:____:____ Nearly all participate.

(75) Teacher's stance: Apart from students ____:____:____:____:____:____:____ Physically close to students.

(76) Amount of teacher movement (Use only spaces 1=none, 4=some, and 7=much.)

____:____:____:____:____:____:____

APPENDIX D

Interview Questions

Sample Questions -- Man and Animals Unit

1. What have you enjoyed most since you began studying about Man and Animals?

2. How do you think you learned the most about baboons -- from booklets, from pictures, from films, class discussions....?

3. If someone said to you that animals communicate with one another in the same way as humans, what would you say?

4. How would you explain to someone the difference between innate and learned behavior? Can you give me some examples?

5. If you were to draw a picture of the human life line, where would you place yourself on it?

6. Do you think baboons live mostly by instinct or mostly by what they learn in the troop?

7. When you were making observations, how did you go about observing others? What kinds of things were you looking for? What kinds of things did you learn? How does learning about something through observations compare with reading about it? (Are there advantages? Disadvantages?)

8. Were there things that weren't shown or weren't discussed that you would want to know more about?

9. I thought you might like to look through the booklets you have read so far and perhaps you could tell me what you thought of each one -- which you liked most, least, found hardest -- what you thought of the pictures, etc.

Sample Questions -- Netsilik Unit

1. Did you do anything while studying about the Netsilik that was particularly exciting or fun? (e.g. act out story of Nuliajuk, Seal Game, etc.)

2. What did each of you read that you especially remember?

3. Is the way in which the Netsilik think about the world the same as the way we do? (e.g. explanations for events like thunder and lightning?)

4. What do you think about the Netsilik films compared to the films in Man and Animals? How do you think EDC films compare to TV programs?

5. Did you see any film that made you admire the Netsilik? Dislike them?

6. Does the Netsilik family seem like your family in any way?

7. If you were an Eskimo, would you rather be a man or a woman? Why?

8. How did you feel about the way the Netsilik sometimes practice infanticide? Was this common or rare?

9. What do you think Netsilik Eskimos really care about?

10. (Show on separate piece of paper the words: Fear, Love, Friendship, Killing, Beliefs, Family, Dreams, Jealousy.) Think about these words. What two words do you associate with the Eskimos as important to them in their lives? Why?

11. (Show them the words: Salmon, Herring Gull, Baboon, American.) You've studied about the salmon, herring gull, baboon. You have also studied about the Netsilik Eskimo. Which of these words do you feel the Netsilik Eskimo is most like? Why?

MAN: A COURSE OF STUDY

Sample Questions

Teacher Interviews

1. What topics have been easiest for students? Hardest? Has the reading level been appropriate?

2. Have the children been interested in some topics more than in others? Which have not appealed? Which have you been most, least interested in?

3. What are the main ideas or learnings that you would like the students to get from this course?

4. Are your kids able to make generalizations or comparisons about the materials? For example....

5. Which parts of the student materials do you feel need revision?

6. Have you done anything in class with reproduction? Natural selection? Language? (Ask for comments on natural selection slides and worksheets.)

7. Has the class done the conflict and play laboratories? Briefly, how were they organized? What did you see as the purpose to them? Was it worthwhile as an experience? Any problems?

8. What activities do kids like best in the EDC course? Learn the most from? What kinds of activities is it hardest to get cooporation for?

9. What kinds of teaching techniques or combinations of techniques have you found especially successful in teaching this course?

10. Are these methods different from those you have used in teaching other social studies courses?

11. Do you find Man and Animals hard or easy to teach? Why?

12. How much use do you make of the teacher's manual? In what ways might it be improved? Are there suggested activities which have been unsuccessful with your students?

13. The whole question of discussion--how do you handle it? What do you feel makes for a good discussion? What size group seems best for discussion? What happens when there is no "right answer"?

14. Do you attend workshops? How often do they meet? Are they organized? What do you see as their major purpose? Results? Are there ways in which they might be made more useful to you? Do any workshop sessions stand out as particularly helpful or interesting? How did the workshops introduce you to the course? Do you feel workshops are necessary for your teaching of the course?

15. In workshops, have you seen any videotapes of class sessions? How would you evaluate the usefulness of these films?

Evaluation Program
1968-1969

Notes on Using the Classroom Observation Form

We hope that by observing classrooms using MACOS and other social studies programs, we will gain perspective on a number of questions:

> How are curricula actually used in the classroom? Are certain types of activities identified with particular social studies programs?
>
> Can we define the general atmosphere or tone of a class? If so, with what does it correlate?
>
> Can we discern the development of cognitive skills?
>
> What changes occur in a classroom "profile" over time?

Some general guidelines for completing the form are given on the following pages.

For each teacher's class, a separate Background Data sheet should be completed. Be sure to record any changes in item 6, seating arrangement. Section A, Description of the content of the lesson, should be completed while the class is in the progress. Since we expect to use the data in this section to illustrate the various cases, specific examples are crucial.

The checklist, B - I, should be done rapidly at the end of the lesson or immediately afterwards (before you return to Cambridge). The checklist is a seven-point scale, with space 1 at the far left and space 7 at the far right.

Items

B. Classroom activity - If a particular activity--for example, open-ended discussion--takes place both in small groups and in the whole class, the observer indicates this by marking the space (#26) the first time the activity occurs and checking "other" with written specification for the second version of the activity.

Worksheets, either produced by EDC or by the individual teacher, should be indicated as such under #28, "other." (A worksheet might also be a written-out set of questions from the teacher to which a written answer is expected.)

21. Guided discussion - All discussions contain some student-to-student interaction; if the exchanges are solely student-to-teacher, we call this a question and answer activity. In a guided discussion the teacher clearly directs or leads the group. He makes statements or asks questions which clarify certain points, or he encourages certain answers, or he redirects the course of the discussion. He may summarize.

25. Question-answer - Most likely the teacher asks the questions and the students answer them, though it is possible that the session consist of students' questions and the teacher's answers.

26. Open-ended discussion - While the teacher may set up the general topic of discussion or pose the problem for the classs to consider, no one answer is sought. The teacher does little, if any, summarizing or directing.

E. Teacher ignored/followed EDC plan - Fill in item after comparing the observed lesson to the suggestions in the teacher's manual.

39 & 58. Quiet/noisy - Spaces 6 and 7 are reserved for noise which interferes with class work, or for a situation which is out-of-hand or chaotic.

40 & 59. Students have sense of purpose - Judge the class on its own terms.

The teacher may not understand EDC's purpose, but may clearly convey HIS purpose to the kids. The latter is what we are looking for.

G. Percent of lesson devoted to verbal activities - Use the clock, please!

H. Verbal aspects of the lesson - By "verbal" we mean talking, reading, and writing.

For this section the observer should take into consideration all verbal activities and present an evaluation which averages different types of verbal activities. For example, if the entire period is spent in small groups and whole class discussions, and if the two activities were different in tone, the observer should check rough mean scores.

47. Short answer/lengthy response - Just bear in mind that kids are not long-winded, so that even a lengthy response won't be too "long." Lengthy response would indicate the expression of a complete thought or full explanation, etc.

51. Students ignore each other's statements - Are the children who are engaged in discussion talking to each other or past each other?

52. Irrelevant statements - We are trying to look at the class on its own terms--if the kids' statements are relevant to even an irrelevant topic, then check the "relevant to topic" end.

53. Students use personal examples - This means some statement by the kids about their personal life, not merely an expression of their opinions. We are interested in what they actually say here, not what might be going on in their minds.

54. Students make references to materials - Again, we mean explicit references, such as "In the film I saw..." "Can we look it up in the

field notes?" This item is not intended to measure use of EDC vocabulary. Use ONLY spaces 1=none, 4=some, and 7=many.

55. Teacher sets and controls agenda - In the broadest sense the teacher always does so, even if it is to designate a certain amount as "free discussion." What we really mean on this item is the extent to which the teacher sets and controls the topics of discussion. The observer should try to note the origin of topics---whether they are formulated by the teacher or by the students.

60. Teacher's role - This item should be read as a continuum, with "authority" indicated in space 1, "non-participant" in space 7, and the degree of "guide" or "resource" in spaces 2 - 6.

71. Class is teacher-dominated/has tone of cooperative venture. This item really gets at the overtness of a teacher's control. A teacher may actually exercise tight control but do so in a way which makes the students feel as if this is not the case--if so, the class would "have the tone of a cooperative venture." Of course, the same tone would exist in a class in which the teacher and students are truly acting as equal partners.

72. Teacher style idea oriented/student oriented - An idea oriented teacher would show primary concern with the material, whether it be facts or concepts. In another sense, he is task oriented. "Student-oriented" refers to a concern with students' behavior or inter-personal relations. For example, a teacher might direct discussion away from the specific EDC content to consideration about how the kids worked together when they were arriving at some answer.

74. Overall student participation - Find the weighted average of items 38 and 57.

APPENDIX E

Sample Interviews

MAN: A COURSE OF STUDY

Interview with a Center City Student

Interviewer: Have you seen any new films lately?

Jim: Yeah, I liked the baboon films that are in the little movie projectors.

Interviewer: Why?

Jim: There's one thing I don't like about them. You can't leave them in the projector too long, or the film will burn.

Interviewer: What do you like about them?

Jim: You can carry it around and stuff. You can look at it and you won't miss anything; like if you're writing down something in your journal, you won't miss anything, because the film goes over and over again.

Interviewer: Is that better than a regular film?

Jim: It's better, because you'll be taking down some notes or something, and you'll miss a whole big part.

Interviewer: How was that film on Irven De Vore?

Jim: I liked it a little bit, but not compared to the little projector. It was okay, but he didn't just show the baboon; he showed other animals.

Interviewer: Like what?

Jim: A gazelle, a cheetah, some other animals, lions.

Interviewer: How about the booklets? Too babyish, too easy?

Jim: The baboon booklets are almost just right, except that I wish they would take some of the words out of it. I liked the pictures mostly.

Interviewer: Do you talk about the pictures?

Jim: Mostly we get to criticize the pictures. Like the way they draw them.

Interviewer: What's the matter with the way they're drawn?

Jim: Like in *Learned and Innate Behavior*, there was this thing that looked like a bear, but it didn't look like a bear because it had funny hands.

Interviewer: What was it?

Jim: I don't know. Some sort of weird creature. And there was this bird with funny-looking feathers and everything.

Interviewer: You don't think the drawings are very good?

Jim: No.

Interviewer: Are the words easy to understand?

Jim: Yeah, except that every time we do a new thing, they keep putting in newer and newer words.

Interviewer: Are the words hard?

Jim: No, I don't think they're that hard.

Interviewer: What are you learning the most from?

Jim: I learn most from the film and discussion that the class gives. I could say the booklets and the films, because when we get into a discussion in the class, the class starts arguing back and forth. Then the teacher calls on someone else and you never get the answer to your question.

Interviewer: Do you ask a lot of questions?

Jim: No. I mostly answer questions and ask little questions. I can answer mostly a lot of questions.

Interviewer: What do you think causes an urge?

Jim: An emotion. Not the kind of emotion like love or hate. An emotion like hunger. Take a baboon. If it gets hungry, the stomach relates up to its brain, and then the brain tells it to find something to eat, and that creates the urge, the feeling, the emotion.

Interviewer: What's the difference between an urge and a desire?

Jim: Well, like a man gets desires, not urges. He gets special kinds of urges.

Interviewer: Do animals only have urges?

Jim: No. Like at the zoo, we saw the squirrel monkeys. One squirrel monkey liked the peanuts, and I tried to offer another squirrel monkey a peanut, and he didn't like them.

Interviewer: So you think that's a desire?

Jim: Yeah, because some people don't like spinach and other people like spinach.

Interviewer: I think you're talking about preferences.

Jim: What's that?

Interviewer: It's when a person prefers one thing, and another person does not prefer it. But that's not really the same thing as desires. Suppose your second monkey just wasn't hungry? Wouldn't that explain why he didn't take your peanuts?

Jim: I don't know.

Interviewer: Suppose you want a candy bar. Is that an urge or a desire?

Jim: That's a desire.

Interviewer: Suppose you have to go to the bathroom?

Jim: That's an urge.

Interviewer: What's the difference?

Jim: You don't have to have a candy bar. It's not going to kill you if you don't get it. If you have to go to the bathroom, it's something real important.

Interviewer: If someone said to you, " Herring gulls live in thick, dark forests," what would you say?

Jim: I'd say they were wrong and that I could prove it. I'd say, "how many times have you gone in the forest and seen herring gulls, and how many times have you seen herring gulls at the beach? Where do you see the herring gulls most of the time?" And they'd say "The beach."

Interviewer: So there aren't any herring gulls in the forest?

Jim: Maybe a different kind from the kind we're studying. Like, I was at the bird section of the Science Museum, and I looked all around and I didn't see any herring gulls. Then I kept going, and they had this one special cage for all the different kinds of herring gulls. There are lots of different types.

You can't take something out of its own environment. Like, if you take the dogs that pull the sleds in Alaska and brought them here or to Florida, it would probably die, because it would not be adapted to living in Florida.

Interviewer: Do you think a baboon could adapt itself to living with man?

Jim: No, especially in the winter time because it would probably freeze.

Interviewer: How about a man?

Jim: Yes. Man knows how to adapt.

Interviewer: How come a man knows how to adapt and a baboon doesn't?

Jim: He's got one special thing. A baboon has it, but not as big.

Interviewer: What's that?

Jim: A brain.

Interviewer: What do you like best in this course?

Jim: To help other people in it. I like working with other people and helping them and having them help me and figuring out the answers together.

Interviewer: Do you get most of the answers that you want, or are there things that haven't been answered and which you want to know more about?

Jim: There are really things that I want to know more about. I don't get most of my answers, especially from the teacher.

MAN: A COURSE OF STUDY

Interview with Center City Students

Group of Four

Interviewer: Well, you spent about a month studying the Eskimo, and you spent the rest of the year on the different animals. What did you like best?

Student: Well, the Eskimos.

Interviewer: Why?

Student: More interesting. It's more interesting because we're not studying just plain animals, like a dog or a cat, we're studying a real human being.

Interviewer: What kinds of things make you and the Eskimo, who lives all the way up there in the North, the same?

Student: Well, we have a heart, and we have blood, and we have feelings. We have feelings. Thinking.

Interviewer: Thinking. Tell me a little bit more.

Student: One of the movies we watched, in one of the movies that we watched, the Eskimos were crossing this water, and he helped the dog across, and he helps his wife across, too, and that's what they sort of mean by feelings. They love each other. He wouldn't leave his wife back there, even if he had to be there on time or something like that. And they call each other by pet names. And they care for the young.

Student: Yeah, and they called each other pet names. I read in Journey to the Arctic they had all this stuff. He loved his wife, and they called each other pet names.

Interviewer: You said something about talking, that was something that made us similar. Do you want to say a little more?

Student: Well, we talk and baboons do, too, but they have a different language. They have a different way of communicating than we do.

Student: Oh, because the baboons, they use a... use animal communication, and the Eskimos, and us... we use human.

Interviewer: So what's the difference?

Student: I think the baboons are motions, because when a predator's coming or something, they holler out... the rest of the baboons will come follow that one. But I think they use motions, and the Eskimos use words.

Student: We use motions too. We signal when to come.

Student: We use both.

Interviewer: Any other thoughts, any way in which the Eskimos are similar to us?

Student: The way they act. Just the way they act. And the way... they still act like human beings.

Interviewer: What kinds of things did you like?

Student: Well, I liked reading the booklets, and reading the booklets and doing pictures of the animals.

Student: I liked listening to the records and reading the book, and looking at the slide.

Student: I liked looking at the slides and films.

Student: I liked the slides and the films too.

Interviewer: What did you think about the booklets? Did you think they were hard, or easy, or boring?

Student: A little bit. I felt funny the way some of the legends they have, about how women came from men.

Interviewer: Oh, the Eskimo story.

Student: And I liked the books of the Eskimo.

Interviewer: Anything that you didn't like?

Student: There were a lot of things that I didn't like, but I don't think they should change them. Like when they took the animal apart and they skinned him, I didn't like that, but there's no reason why you should change it, because it's true, that's what they did. So let them. We have to clean fish and take them apart before we have to eat them, too.

And just because you don't like it doesn't mean... that's their way of living.

Student: They should go in deeper, more into man.

Interviewer: But do you think you should spend less time on the animals and more time on the Eskimo?

Student: Equal time. A little bit more on the Eskimo.

Student: Yes, because you need more studying of the Eskimos, because he's man.

MAN: A COURSE OF STUDY

Interview with a Suburban Student

Interview with Frank

Interviewer: What readings have you liked the most?

Frank: I liked *On Firm Ice*. It has a lot of good stories in it. You see, we started, the most we read is a story or two. We had Social Studies third period today, so we haven't done anything yet.

Interviewer: Did you prefer the pictures in one book to those in another?

Frank: I thought the pictures in *On Firm Ice* were really good, because they were sketched, and everytime the artist wanted the effect of light he just left a blind space, and he colored with charcoal.

Interviewer: Do you feel that their life is like a routine type of thing? I mean, do you think it would be kind of dull?

Frank: Well, not really dull, because they're always going out to hunt, and it's not really a routine, because they do different things on different days. And they do it at different times. Part of the day is routine, though. Like, in hunting, they can only go at certain times, because of the taboos. And you know when they go seal-hunting, they can only do special things.

Interviewer: If you were an Eskimo, would you rather be a man or a woman?

Frank: Man.

Interviewer: Why?

Frank: Because it seems more exciting.

Interviewer: Here's a list of words. Please pick the two you think important to the Eskimo's life...

Frank: Friendship and love.

Interviewer: How come?

Frank: Well, if they didn't cooperate with each other and love each other, they couldn't live in the environment up there, because of the arguments. They'd be arguing and everything and it would be hard to hunt, you know, if you don't get the cooperation of the family, and by their culture, if somebody does something wrong at the wrong time, then you need to, uh, I don't know how to put it.

Interviewer: Make them feel that they're...

Frank: Um-hum.

Interviewer: How have you felt about studying the Eskimos? Did you like it or not?

Frank: It's much more exciting than studying about the baboons or some of the other things, salmon or something, because you're studying human beings.

SCRIPT: MAN: A COURSE OF STUDY

Interview with Center City Students

June, 1968

Interviewer and students:
Jacqueline, Venus, Morris

Interviewer: There are four words here, and they're 'salmon,' 'American,' 'herring gull,' and 'baboon.' And you've been studying about the Netsilik Eskimo. Which of these four would you say the Netsilik Eskimo was most like? What do you think about it?

Venus: I think the baboon.

Morris: I do, too.

Interviewer: What do you think about it, Jacqueline?

Jacqueline: Maybe the baboons.

Interviewer: But you started to say something different, I think. What did you start to say first?

Jacqueline: An American. ....Because he defends his family and he feeds the family and gets the food. And the female helps do things, too, like Americans do. And the children play. And American children play, too.

Interviewer: Morris, why do you think that the Netsilik is most like the baboon?

Morris: Because the Netsilik Eskimos run around and find food and the baboons go around on the savannah finding food. And most of the time the Netsilik need somebody to help them -- they groom when they're little and the baboon's mother or some other baboon just sit around and groom each other. And the baboon troop at night, the baboon just sit down softly and groom each other.

Venus: I say that an American and the Eskimo are people. That's how they're alike. So I should say an Eskimo is an American, maybe, because I think Alaska belongs to America. And most Eskimos live in Alaska and so they're American. I think the Eskimo and the baboon are much alike because the male of the family in the Eskimo family protects the family. He's the one who goes out to harpoon the dinner.

Interviewer: I bet you don't see your father do that often.

Venus: No, he only has to go to the grocery store and buy. Well, anyway he gets it, like my father would have got it. The mother protects the young and she teaches him...so does the father...the ways of his life after they are gone. And so does the Eskimo mother. They come together and they do things together...it's like a troop, a baboon troop. They all just don't do a different thing or wander off somewhere by theirselves. They're all together. And in times of emergency, an Eskimo family would come together so that they can defend theirself and make more of their...

Morris: I disagree because the young juvenile will be running around with each other. They don't want to be together.

Venus: I didn't say at night. I said in times when they needed to defend theirself they should be together. They are together.

Morris: But in other times they'd be scattered all across the savannah looking for food. They'd be in a troop, but they....

Venus: At night they'd still be together....

Morris: Not all of them.

Venus: They'd be together in a tree, sleeping. They're still in one tree. If they all can fit in one tree, they all get in that one tree to sleep.

Morris: If they're sleeping. They don't have to sleep.

Venus: They do sleep in one tree.

Morris: They do sleep, but they probably play before they go to sleep.

Venus: But they're asleep...When they're asleep, they're together.

Morris: A second thing I disagree with is, I think that the Eskimos originally came from Asia.

Venus: I didn't say where they came from. I said....

Morris: You said they live in....

Venus: I said some live in Alaska.

Morris: Well, I think they originally came from Asia. I think that the Netsilik are a cross between the American and the baboon, but I think the American is probably closest to the Netsilik Eskimo, because of what Venus and Jacqueline said.

Interviewer: I see. Are all human beings more alike than any human being and any animal?

Venus: I would say yes. I don't know if anybody else would say yes.

Interviewer: You'd say yes also? Well, what are some of the key things that all those human beings have that the animals just don't have? Jacqueline?

Jacqueline: A brain?

Morris: A larger brain.

Venus: That's right.

Interviewer: Okay, what does that larger and better brain allow all of those different human beings to do?

Morris: The human probably can survive longer than an animal can.

Venus: I'd say it allows it to explain what happens.

Interviewer: Explain what happens. Now, what do you mean by that?

Venus: Like if an animal sees it rain, he can't tell another animal, I don't think, why it's raining, but a human can think of some way...he doesn't know if it's right or not, but he'll say, "Well, some man or god, we mistreated him and he made rain to punish us."

Interviewer: I see. So animals don't have beliefs and they can't explain things.

Morris: But animals can show feeling for other animals.

Interviewer: They can or can't?

Morris: They can.

Interviewer: They can show feeling for one another?

Jacqueline: I agree with Venus.

Interviewer: I see. Well, tell me. Had you people thought about this kind of a question before?

Venus: Oh, we studied the Netsilik Eskimos last year and we studied the things they did, but we never compared them with an animal.

Interviewer: Do you think it's a good idea to compare animals...to study both animals and human beings?

All: Yes.

Interviewer: Why? What's good about that?

Venus: Say, like if we wanted to study a baboon. We'd go on the savannah. They have a place for us to watch these certain baboons. We've studied the baboons, so we know what they like and what they dislike. So we get this animal, we give this animal what he likes, and we could make contact with this animal. He would follow us into a camp and we could study him closer and see how his structure's made and what makes him do these things.

Interviewer: I see.

Morris: Or we could see if the animal is deadly to man or is he friendly to man.

Interviewer: Of all that you studied...you learned something about the salmon, and the gull, the baboon, and about the Eskimo. What were your favorites?

Morris: It was the salmon.

Jacqueline: I'd say the baboon.

Venus: The salmon.

Interviewer: You liked the salmon. Two of you like the salmon. What did you like the salmon for?

Morris: I liked the salmon because it shows how animals that don't have to depend on other animals can live. Because the baby salmon, it can't depend on its mother and father because they died when they laid the eggs. The salmon, they live on their own.

Venus: What I liked about(the salmon), they made me most curious ... At first I wondered why do you want to swim up this stream, this certain stream to lay the eggs? And...he does not know he's going to die after he reaches this point. This made me like him more. And I liked his struggle, he struggled very hard to go upstream. And sometimes they'd make it and sometimes they'd fail.

Interviewer: Did you ask questions to the teacher or, what happened?

Jacqueline: We asked sometimes the whole class and someone in the class that knew the answer would tell us the answer. And sometimes... And when they'd tell us the answer, somebody else in the classroom might disagree with them.

Interviewer: What's your favorite subject?

Venus: Man and Animals. Before that I had geography, but...

Interviewer: But now you like this best?

Venus: Yes.

Interviewer: What about you, Morris?

Morris: I like Man and Animals best, too.

Interviewer: Really? I mean, don't just say this to be nice.

Morris: No, I do.

Interviewer: Why?

Morris: Well, you get a chance to say more what you're feeling. In any other class you're going to have to just write down reports. It gave me a chance to express how I feel about that particular field.

Jacqueline: We had books and we read and we asked questions and Mrs. ... had a girl in the classroom write down the questions and we read our way through the books and found out some of the answers and came back and the next day she'd ask us if we knew the answers. And sometimes we didn't find out the answers and we'd have to look into another book.

Interviewer: And sometimes, I imagine, you never could find any answers, to some questions that no one knows the answers to. Did you find any of those?

Morris: There was one question I asked about the herring gull. I asked when they need an extra island, the mates, do they stay together or do they break up? And we never found an answer to that question.

Interviewer: Did you ever work in groups? Did you ever sit and talk in groups together?

All: Yes.

Venus: Sometimes, you know, our groups are in students, you know, we're by ourselves. And in this group we can argue with each other and like that and then we can go up to a certain book and look into a certain page and write down the answer to it. But in the class, you'd have to have the whole class say, "Well, you read this page and you will find the answer to this thing." But when you're in a small group, you walk up to it and say, "Well, here's that answer, right here."

Interviewer: What did you think of the films that you saw?

Jacqueline: It was fun. We even had some real slides to look through and we could see some of the pictures.

Interviewer: You liked the Eskimo films better?

Venus: Uh-huh.

Interviewer: What about you, Morris?

Morris: I liked the Man and Animals.

Jacqueline: Eskimos.

Interviewer: Why did you like the Eskimo films better?

Venus: Because when they showed a film, they seemed more like us. They sort of gave me a picture of my family if I were out there.

Interviewer: Oh, really? Tell me something about that.

Venus: Like the time they were crossing the river. If my father was there, I guess he would cross it first, just to see how deep it was, and then he would carry my mother across, and I'm just about as tall as he is, so I could walk across, but my sister would have to be carried. And my mother could help carry something on her head as we walked across. I could, and so could my father. That's one thing in the picture I saw. And my mother always combs her hair and makes my father happy. And we are always together. And they looked sort of happy together.

Interviewer: I see. So you really feel that there's a lot of similarity between your family and that family? What about you, Jackie? Why do you like the Eskimo films?

Jacqueline: I like the Eskimos because they're more like us; they comb their hair, and how things are.... If we lived in the Arctic, my father would...like the mosquitoes started biting on the little boy and the mother tried to protect him from the mosquitoes. And she gave him a balloon to entertain him. And he fished and got food.

Venus: When you're young, whatever you do and your mother is happy, that makes you more happy.

Interviewer: That's interesting. Do you think the Eskimos are happy people?

Jacqueline: Yeah.

Morris: I don't think they're happy. They don't have a very good life.

Interviewer: You don't think they're happy?

Morris: I think they're happy because I don't really think they know any other kind of way to live, because their ancestors and their ancestors before that lived the same way.

Interviewer: I'm just not sure I got you. So you think they are or are not happy?

Morris: I think they are happy.

Interviewer: They are happy because they don't know anything else?

Morris: Yeah, because they'll be happy with their way of life.

Interviewer: Would you be happy with it?

Morris: I don't really know....

Interviewer: You don't really know?

Morris: I think they live in a place where it's not...really not a big community, where probably a few Eskimos live.

Venus: I think they're happy, too, because I think if they weren't happy, they would strive their best to move to a different place. Now on some occasions they do move away to get more sun. But why do they constantly move back to the same spot? So they must want to be there.

Interviewer: So they must be pretty happy around there?

Jacqueline: I think they're happy.

Interviewer: Think they're happier than we are?

All: Nooo.

Venus: I don't think so. Since we have more pleasures, we can go to the movies...

Interviewer: What about you, Morris? Do you think they're happier than we are?

Morris: We're happier than they are, because we have more advantages to do different things than they have.

Interviewer: What about you, Jacqueline?

Jacqueline: I think we're more happier than they are, because we have a lot of entertainment. And we don't have to... the parents don't have to go so far to get the food. Like he had to go all the way into the water and here all they have to do is send their children to the store to buy food.

Morris: You can call on the telephone.

Interviewer: Are there any books that you read that you like especially well? Any of the booklets that you particularly liked?

Venus: Songs My Mother Taught Me.

Interviewer: That was a book of Eskimo songs?

Venus: Yes.

Interviewer: Are there any other favorite booklets?

Morris: I liked that Netsilik book that showed...where you read about more of their beliefs.

Interviewer: You liked to read about their beliefs? Did you like any of the Man and Animal booklets particularly?

Morris: Well, I liked all of them.

Jacqueline: I liked all of the Man and Animal books and I liked the book called Songs and Stories of the Netsilik Eskimo.

Interviewer: You'd like your little brothers and sisters to learn the same thing?

Venus: Yes.

Interviewer: How about you, Morris?

Morris: I want them to learn the same thing, but when they get up to the sixth or fifth grade. Because they could come up and say, "Morris, did you study that? Well, we're studying it now." And I could say "Yeah," and I could talk to them about it.